

AUTOMOBILES

First Copy

INDEX

TECHNOLOGY DEPARTMENT

THE MOTOR AGE

THE AUTOMOBILE AUTHORITY.

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CHICAGO SEPT. 19, 1901

Vol. V. No. 2

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KOKOMO, IND.

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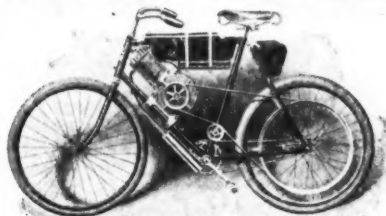
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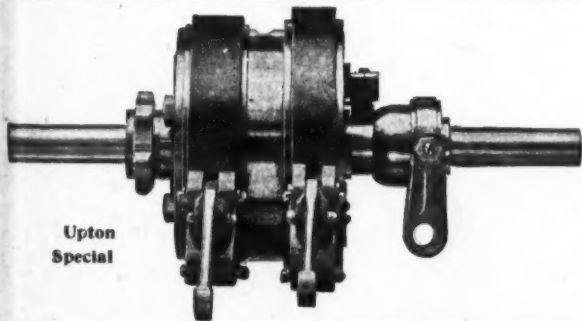
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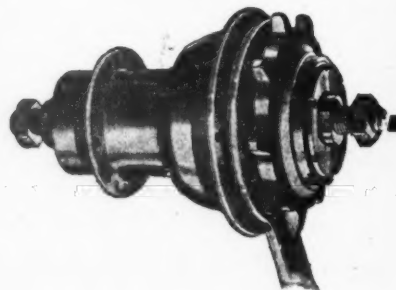
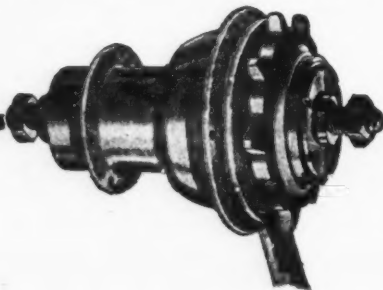
HOW MANY

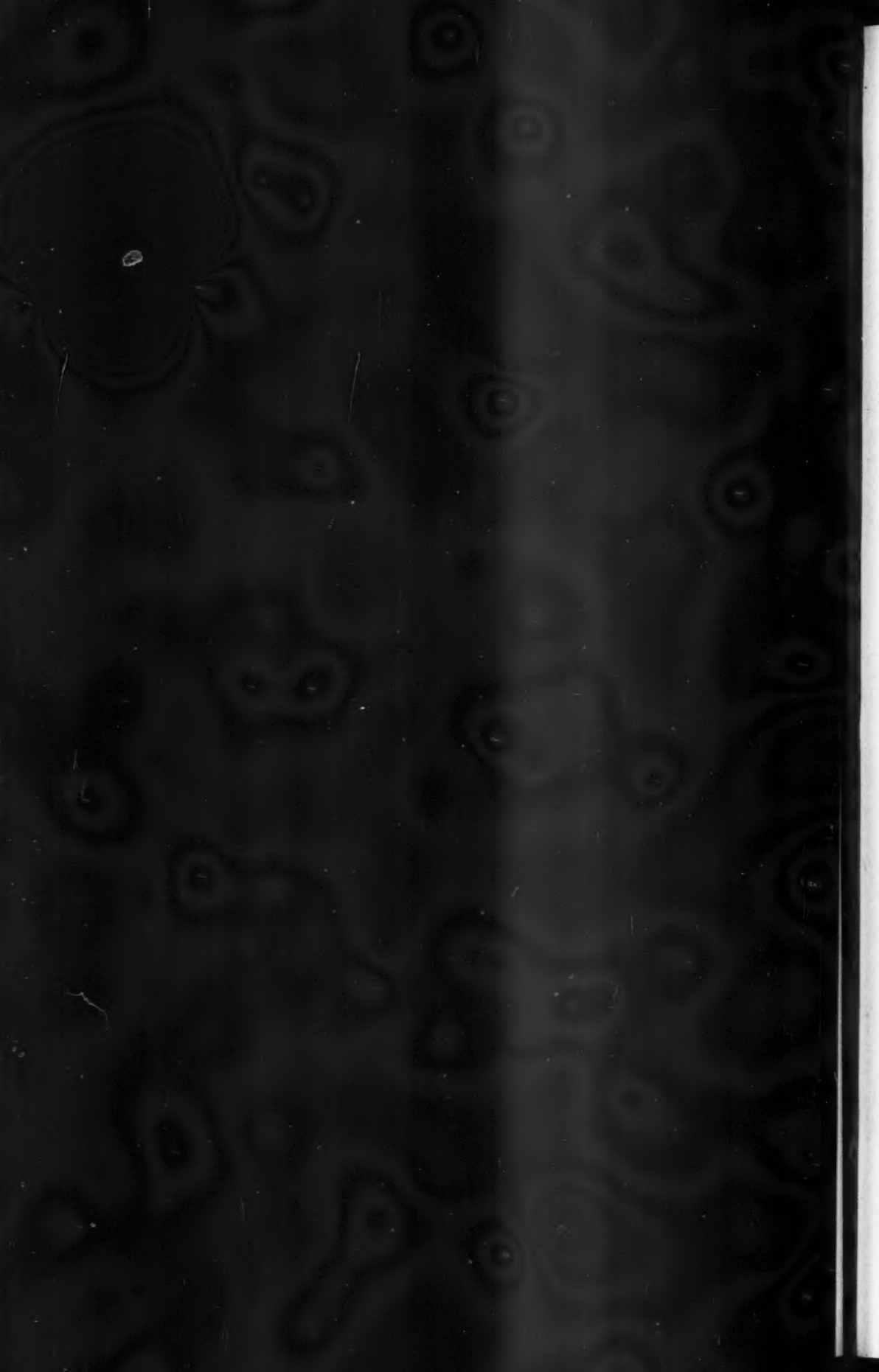
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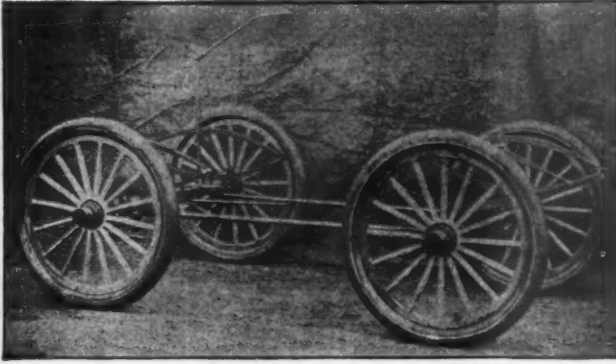
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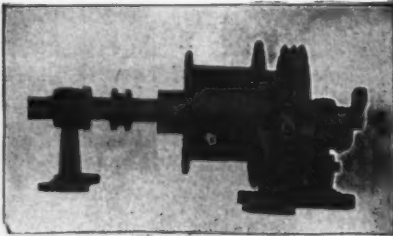
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Which is the best Engine and Transmission, its easy, its the

BUFFALO GASOLINE MOTOR CO'S

Four cylinder non-vibrating mechanically operated inlet valves, and

EMPIRE GEARLESS TRANSMISSIONS

Only guaranteed transmission made

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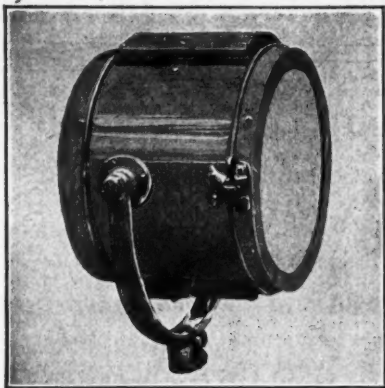
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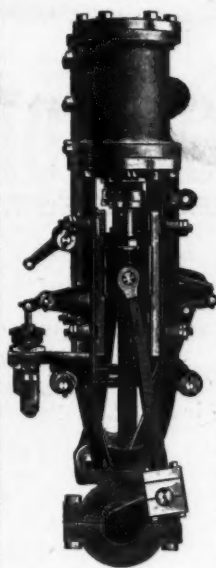
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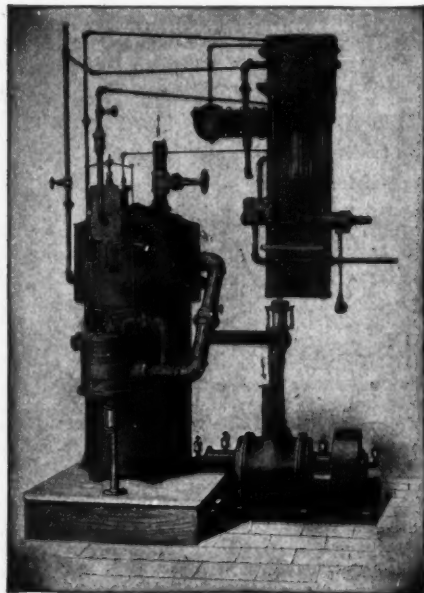
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In use in steam laundries with small requirements and packing houses using 300 gallons of gasoline daily.

**Gas of required density without use
of supplementary air blast.
No condensation.
Vaporizes every particle of oil.**

We shall be pleased to figure on the requirements of automobile manufacturers.

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Searchmonts AT Buffalo

Just as we predicted, our two Searchmonts arrived in Buffalo in good order, despite the fact that they were just out of the factory. Such a record over such a road should satisfy anyone.

SEARCHMONT MOTOR CO.

1230 Orkney Street,
PHILADELPHIA, PA.

The Autocar

AMONG THE LEADERS

After being awarded first prize in the hill-climbing contest on Nelson Hill, the AUTOCAR continued its westward flight toward Buffalo, completing the last stage of the journey well up to the front. Both of the Autocars finished in good order. :: :: ::

The Autocar Co.,

ARDMORE,

- - - - -

PENNSYLVANIA

NEW YORK TO BUFFALO ENDURANCE TEST

THE death of President McKinley, occurring during the early hours of Saturday morning, of course caused the abandonment of the last stage of the endurance run, the participants joining with the remainder of the Nation in its grief at the departure of one who, as soldier, statesman and common citizen had served it faithfully.

The following UNOFFICIAL FIGURES were taken by representatives of Motor Age. Official figures are not ready. The list includes only those who registered at EVERY CONTROL. It is barely possible that others, who missed a single control, may appear in the official list.

Eligible for first-class certificates, average speed from 12 to 15 miles per hour:

Panhard, gasoline, 2500 lbs., 30 horsepower; David Wolfe Bishop; average 15 miles.

White, steam, 1350 lbs., 6 horsepower; White Sewing Machine Co.; average 13 miles, 1680 yards.

White, steam, 1350 lbs., 6 horsepower; White Sewing Machine Co.; average 13 miles, 1315 yards.

Packard, gasoline, 2100 lbs., 12 horsepower, Ohio Automobile Co.; average 13 miles, 575 yards.

Foster, steam, 1400 lbs., 6 horsepower, Foster Automobile Mfg. Co.; average 13 miles, 185 yards.

Panhard, gasoline, 2400 lbs., 12 horsepower; A. R. Shattuck; average 12 miles, 1755 yards.

Lane, steam, 1650 lbs., 9.99 horsepower; Lane Motor Vehicle Co.; average 12 miles, 1490 yards.

Hydrocar, gasoline, weight not given, 6 horsepower; American Bicycle Co.; average 12 miles, 1330 yards.

Gasmobile, gasoline, 2100 lbs., 9 horsepower; Albert T. Otto; average 12 miles, 1205 yards.

Packard, gasoline, 2100 lbs., 12 horsepower; Ohio Automobile Co.; average 12 miles, 960 yards.

Packard, gasoline, 2400 lbs., 14 horsepower; A. L. McMurtry; average 12 miles, 935 yards.

Locomobile, steam, 900 lbs., 3½ horsepower; C. A. Benjamin; average 12 miles, 710 yards.

Packard, gasoline, 2350 lbs., 16 horsepower; Dr. T. J. Martin; average 12 miles, 530 yards.

Eligible for second-class certificates, average speed between 10 and 12 miles per hour:

Columbia, gasoline, 1700 lbs., 4½ horsepower; J. Seligman; average 11 miles, 1378 yards.

White, steam, 995 lbs., 6 horsepower; White Sewing Machine Co.; average 11 miles, 1285 yards.

Columbia, gasoline, 1640 lbs., 4½ horsepower; G. B. Pettingill; average 11 miles, 1254 yards.

Stanhope, Gasoline, 1500 lbs., 7 horsepower; U. S. Long Distance Automobile Co.; average 11 miles, 105 yards.

Locomobile, steam, 999 lbs., 3½ horsepower; Locomobile Co. of America; average 10 miles, 950 yards.

St. Louis, gasoline, 1400 lbs., 7 horsepower; St. Louis Motor Carriage Co.; average 10 miles, 820 yards.

Locomobile, steam, 999 lbs., 3½ horsepower; Locomobile Co. of America; average 10 miles, 415 yards.

Winton, semi-racer, gasoline, 1700 lbs., 12 horsepower; Alexander Dow; average 10 miles, 95 yards.

Available for third-class certificate, average speed between 8 and 10 miles per hour:

Knox, three-wheeler, gasoline, 700 lbs., 4 horsepower; Knox Automobile Co.; average 9 miles, 940 yards.

Vehicles which missed only one control and may be eligible for certificates:

Haynes-Apperson, 2 vehicles, missed arrival at Herkimer.

Pierce, missed arrival at Oneida.

White, missed arrival at Oneida.

Winton, missed arrival at Albany.

De Dion, missed arrival at Herkimer.

Vehicles which missed two controls:

Robinson, missed departure from Albany and arrival at Herkimer.

Autocar, missed arrival at Herkimer, and departure from Oneida.

Gasmobile, (John Jacob Astor) missed arrival at and departure from Oneida.

Packard, missed arrival at and departure from Oneida.

Duryea, three-wheeler, missed arrival at Herkimer and arrival at Syracuse.

Century, missed arrival at and departure from Poughkeepsie.

De Dion, missed arrival at and departure from Fonda.

THE RUN AND ITS LESSONS

There were eighty-two starters out of eighty-nine entries. The absentees were a Stratton motor bicycle, Bostwick's Winton racer, Vanderbilt's Mercedes racer, Dr. Lipman's Panhard, Milwaukee touring buggy, Dr. Baruch's autocar and Winton's racer. The large machines were shipped to Buffalo for the Erie-Buffalo race. Forty-one vehicles, or exactly one-half of the starters, were officially timed at Rochester.

MANAGEMENT WAS IMPERFECT.

The excellent start, the splendidly arranged program, and everything else connected with the preliminaries of the New York to Buffalo endurance test, gave promise of a contest whose arrangements should be almost beyond reproach. But the promise was not carried out in detail.

Circumstances over which the Automobile Club of America had no control added to circumstances over which the club might have exercised control had it made the arrangements for the run as systematically as the program led one to suppose they had been made robbed the event of a great deal of the usefulness which had been expected of it.

THE CLUB'S OBJECT DEFEATED.

So far as the original intention of its promoters is concerned, the run was an absolute failure. It was not an endurance run in the sense originally intended. Months ago a number of manufacturers expressed, through Motor Age, the opinion that the object of the club would not be attained because special machines, operators and facilities would be pressed into service. They were perfectly right. Vehicles were equipped with all sorts of appendages which no private owner would use in everyday practice. Mechanics were everywhere. The trains were full of them. They flashed about the storage stations well into the night—sometimes all night. They carried every conceivable part, short of the body, and made so many changes that some of the vehicles which reached Buffalo were entirely unlike those which left New York. The operators were the most skilful obtainable and most of them were accompanied by mechanics. That condition, surely, was not contemplated by the club. It was intended that vehicles should go through as they started, or not at all. The

club has probably learned a lesson, for its object has been completely defeated. No one will ever know the true inwardness of the repairs and replacements. The breakdowns, remedied by wonderful road-side repairs, will have no historian. Scraps of information will reach the public, but in such shape as to be of no practical value. There is but one way of conducting such an event and obtaining the ends sought, viz.: to follow the British custom of labeling and sealing every part which lends itself to such an operation and to appoint experts to examine into the condition of affairs at the finish.

HILL-CLIMBERS WERE HINDERED.

The hill-climbing contest was almost a farce. The results prove nothing. The arrangements, so far as the club was concerned, were good, but the work of the men appointed to carry them out was bad. It had been arranged that vehicles should line up at the foot of the hill, one behind another. Then they were to be started in turns, no vehicle to be allowed to start until the one ahead had finished. Failure to attend to this part of the plan caused all the trouble. Men had been stationed near the top whose duty it was to hold up flags until the hill was clear. These gentlemen forgot their instructions and became so engrossed in the proceedings as to neglect them. The flags went down, time after time, before the hill was clear, with the result that competitors were hindered and sometimes brought to a standstill by machines ahead of them. The Locomobile people made a claim on this account, and entered a formal protest. It was said afterward that they had regarded their chances with considerable confidence and were sorely disappointed at the result.

The hill-climbing contest proved several things, notably these: That steam and gasoline machines should never be placed in the same competition; that classes of one, two and three thousand pounds are not sufficient to properly divide the machines; that to arrive at any really valuable data machines should be classified by horsepower as well as by weight; that the efficiency of high-powered machines decreases proportionately as the horsepower increases; that, considering weight and power, the Colum-

THE ENDURANCE TEST.

THE ROYALTY TABLE.

Of the eighty-two starters, twenty-two went through the entire journey without missing a control. The following table shows, approximately, the times of each on each stage of the journey, their total time and the distance per hour. The figures do not show the actual time made, however, and no figures will ever be published which do, because competitors frequently arrived at controls before the time announced for the opening, and the time credited to them was that at which the controls formally opened. Under the rules, no vehicle can receive an award which exceeded an average speed of fifteen miles.

| No. | MAKE. | Seats | Passengers | Form of Power | Horsepower | Weight | New York to Peekskill 44.6 Miles | Nelson Hill to Poughkeepsie, 36.9 miles | Poughkeepsie to Hudson, 41.3 miles | Hudson to Albany, 34.1 miles | Albany to Fonda, 44.5 miles. | Fonda to Herkimer, 37.7 miles. | Herkimer to Oneida, 38.3 miles. | Oneida to Syracuse, 27.8 miles | Syracuse to Lyons 48 miles | Lyons to Rochester, 39.02 miles | Total time on road | Approximate average per hour. | |
|------|-------------------------------|-------|------------|---------------|------------|--------|----------------------------------|---|------------------------------------|------------------------------|------------------------------|--------------------------------|---------------------------------|--------------------------------|----------------------------|---------------------------------|--------------------|-------------------------------|-------|
| | | | | | | | | | | | | | | | | | | Miles | Yards |
| C 55 | Panhard..... | 2 | | G | 30 | 2500 | 1:44 | 3:01 | 2:43 | 2:15 | 2:58 | 2:24 | 2:35 | 1:30 | 3:12 | 2:42 | 25:13 | 15 | |
| B 13 | White..... | 2 | | S | 6 | 1350 | 2:35 | 2:22 | 2:32 | 2:11 | 3:04 | 3:02 | 2:33 | 2:20 | 3:59 | 3:25 | 28:03 | 13 | 1680 |
| B 14 | White..... | 2 | | S | 6 | 1350 | 2:46 | 2:22 | 2:29 | 2:05 | 2:57 | 3:03 | 2:50 | 2:27 | 4:40 | 2:43 | 28:29 | 13 | 1315 |
| C 24 | Packard..... | 2 | | G | 12 | 2100 | 2:43 | 2:14 | 2:43 | 2:15 | 2:55 | 3:42 | 2:44 | 2:17 | 3:46 | 3:03 | 29:22 | 13 | 575 |
| B 70 | Foster..... | 2 | | S | 6 | 1400 | 2:48 | 2:33 | 2:41 | 2:10 | 3:06 | 3:23 | 2:46 | 2:16 | 4:35 | 3:32 | 29:52 | 13 | 185 |
| C 2 | Panhard..... | 2 | | G | 12 | 2400 | 2:52 | 3:00 | 2:40 | 2:07 | 4:21 | 3:30 | 3:04 | 1:52 | 4:08 | 2:31 | 30:05 | 12 | 1755 |
| B 28 | Lane..... | 4 | | S | 9.00 | 1650 | 2:37 | 2:24 | 2:41 | 2:15 | 3:33 | 3:40 | 3:58 | 2:53 | 4:48 | 3:30 | 32:28 | 12 | 1490 |
| B 86 | American Bicycle Co..... | 2 | | G | 6 | | 2:52 | 2:38 | 2:43 | 2:11 | 3:30 | 4:00 | 3:08 | 3:09 | 4:05 | 2:23 | 30:39 | 12 | 1330 |
| C 31 | Gasmobile..... | 2 | | G | 9 | 2100 | 3:04 | 2:47 | 2:41 | 2:05 | 3:02 | 3:21 | 4:10 | 2:13 | 3:45 | 2:43 | 30:51 | 12 | 1205 |
| C 23 | Packard..... | 2 | | G | 12 | 2100 | 2:42 | 2:15 | 2:32 | 2:15 | 2:55 | 3:18 | 6:39 | 1:56 | 3:49 | 2:39 | 31:12 | 12 | 960 |
| C 56 | Packard..... | 2 | | G | 14 | 2400 | 2:56 | 2:24 | 2:34 | 2:01 | 2:56 | 3:05 | 3:04 | 2:34 | 5:20 | 4:18 | 31:14 | 12 | 935 |
| A 47 | Locomobile..... | 2 | | S | 3½ | 900 | 3:04 | 2:45 | 2:52 | 1:58 | 3:41 | 4:17 | 2:47 | 2:49 | 4:23 | 3:01 | 31:33 | 12 | 710 |
| C 79 | Packard..... | 3 | | G | 16 | 2350 | 2:50 | 2:38 | 2:31 | 2:42 | 3:21 | 4:05 | 3:06 | 2:23 | 4:56 | 3:02 | 31:49 | 11 | 530 |
| B 78 | Columbia..... | 3 | | G | 4½ | 1700 | 3:03 | 2:38 | 3:31 | 2:10 | 3:53 | 4:06 | 3:43 | 2:25 | 4:19 | 2:53 | 33:13 | 11 | 1378 |
| A 11 | White..... | 2 | | S | 6 | 995 | 2:36 | 2:27 | 2:38 | 2:38 | 2:49 | 2:55 | 3:02 | 6:06 | 3:57 | 2:47 | 33:21 | 11 | 1285 |
| B 80 | White..... | 2 | | G | 4½ | 1640 | 3:06 | 2:28 | 2:36 | 2:38 | 6:40 | 3:52 | 2:43 | 2:35 | 4:25 | 2:56 | 33:25 | 11 | 1254 |
| B 81 | U. S. Long Dis. Auto. Co..... | 2 | | G | 7 | 1500 | 3:26 | 2:27 | 2:50 | 2:14 | 3:14 | 3:57 | 5:08 | 2:52 | 5:12 | 3:50 | 35:23 | 11 | 105 |
| A 37 | Locomobile..... | 2 | | S | 3½ | 900 | 2:53 | 2:25 | 2:31 | 2:14 | 4:43 | 3:53 | 4:32 | 2:44 | 4:39 | 4:34 | 37:08 | 10 | 950 |
| B 34 | St. Louis..... | 2 | | S | 7 | 1400 | 3:12 | 2:25 | 2:31 | 2:17 | 3:41 | 5:21 | 6:13 | 2:18 | 5:01 | 3:03 | 37:23 | 10 | 820 |
| A 38 | Locomobile..... | 2 | | S | 3½ | 989 | 2:55 | 2:54 | 2:37 | 2:20 | 4:27 | 4:56 | 4:35 | 3:08 | 4:52 | 5:25 | 38:09 | 10 | 455 |
| B 22 | Winton..... | 2 | | G | 12 | 1700 | 2:45 | 2:32 | 2:29 | 2:06 | 4:21 | 5:47 | 4:17 | 2:33 | 4:42 | 7:24 | 38:56 | 10 | 95 |
| A 82 | Knox..... | 2 | | G | 4 | 700 | 3:12 | 3:01 | 2:56 | 2:23 | 4:39 | 6:20 | 4:52 | 3:38 | 5:50 | 4:02 | 41:03 | 9 | 940 |

THE ENDURANCE TEST.

bia was immeasurably superior to all other vehicles.

The comparison of steam and gasoline machines is improper for the reason that the steam rig, concentrating all its energy for the supreme effort, makes the ascent quickly but expends all of its energy in doing so. The gasoline vehicle makes the ascent more deliberately, but its power is exactly as great at the finish as it was at the commencement. In view of the fact that no man is likely to buy an automobile solely because of its ability to climb a hill at great speed, the comparison is useless, as well as unfair.

SUBSTITUTION OF VEHICLES.

The actual power of the Panhard driven by Mr. Bishop is unknown to the club officials. It was given in the catalogue as 30-horsepower. Fournier made the statement that it was between 40 and 45 horsepower, basing his statement on his knowledge of the machine while racing in France. The catalogue was not reliable, a fact due to the substitution of machines after the list had been closed. The propriety of allowing these changes is open to question, but in this, as in a number of details, the rules were not enforced. For example, the speed limit was totally ignored from the start, within and without the controls. At the close of the first day the operators boasted openly of the men and machines they had "done up" on the way. From that time a majority were content only when traveling at great speed. There were races innumerable. It is fortunate, perhaps, that but one high-powered vehicle took part, else the scramble for first place might have forced upon the committee the embarrassment of warning the chief offenders. The laws of New York state regard 15 miles per hour as the safe limit. The speed of the machines—and this remark applies to 90 per cent of all of them—was limited only by their capacity to "eat up the road." But there was little to grumble about after middle-day Tuesday. The man whose machine could exceed the legal limit through the mud was possessed of a phenomenon indeed.

SCANT CONSIDERATION OF COMPETITORS.

The death of President McKinley made it an absolute necessity to declare the run at an end at Rochester. There was no necessity, however, of the unceremonious dis-

missal of the contestants who had struggled so hard to make the event a success. The committee held a meeting Friday night, when the news from Buffalo showed that the death of the president was a mere matter of hours, and decided that, should the dread event occur during the night, the run should end at Rochester. But no notice of this action was given competitors or the press except that one newspaper man received a quiet hint from one of the members of the committee and communicated it to his fellow laborers. In the morning there was no bulletin. It became noised around that the run would not be continued and that was all. The chaffeurs started for Buffalo or any other point that suited them without the formality of a word from the club men who, in their turn, departed in all directions, leaving all hands to guess the prospects of the Erie to Buffalo race, the eventual decision of the award for the contests and all other matters in which they might happen to be interested. There were men among the competitors who felt that at least some show of consideration was due them after the arduous work through which they had passed.

How they went, or when or where no one knows. A large number continued the journey to Buffalo for the satisfaction of finishing the journey, even though unofficially. As a matter of fact, practically all of the arrivals at Rochester would have finished the trip with ease, the distance being only 70 miles and the road a vast improvement on that over which they had come.

GOOD SHOWING OF AMERICANS.

That the Panhards should be the object of comment all along the line was natural. Its sonorous snort became part of the accepted program, morning, noon and night. At other times it was generally lost in the distance, none of the others being able to hold it on any stage of the journey. The big machine is reported to have gone through the ordeal without a mishap. That it did so is due to the excellent arrangements of Mr. Bishop and the care with which he saw to their consummation. Bishop is, in every sense of the word, a chaffeur. Unlike some other "gentlemen amateurs" who assumed the management of their machines only when passing through populous districts and left them, at every

THE ENDURANCE TEST

This table shows the times of the vehicles which missed one or more controls. No attempt has been made to prepare total elapsed times. They could show only the total times less such controls as were missed and would be of no value for comparison with

the vehicles in the other table or with each other. No one seems to have any definite understanding how these vehicles are to be dealt with in the matter of awards. The rules provide only for average time for the entire journey.

| No. | MAKE | No. of passengers | Form of power | Horsepower | Weight | New York to Peekskill 44.6 miles | Nelson Hill to Poughkeepsie 36.9 miles | Poughkeepsie to Hudson 41.3 m. | Hudson to Albany 34.1 miles | Albany to Fonda 44.5 miles | Fonda to Herkimer 37.7 miles | Herkimer to Oneida 38.3 miles | Oneida to Syracuse 26.8 miles | Syracuse to Lyons 48 miles | Lyons to Rochester 39.02 miles |
|------|-----------------------------------|-------------------|---------------|------------|--------|----------------------------------|--|--------------------------------|-----------------------------|----------------------------|------------------------------|-------------------------------|-------------------------------|----------------------------|--------------------------------|
| C 1 | Robinson..... | 4 | G | 16 | 2425 | 2:50 | 2:16 | 2:20 | 2:01 | ... | ... | 2:53 | 2:02 | 4:47 | 2:51 |
| A 3 | Knickerbocker..... | 3 | G | 5 | 700 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| B 4 | Haynes-Apperson .. | 2 | G | 8 | 1800 | 2:28 | 2:42 | 2:22 | 2:01 | 2:58 | ... | 3:02 | 2:01 | 3:29 | 3:20 |
| B 5 | Haynes-Apperson .. | 2 | G | 8½ | 1800 | 2:52 | 2:21 | 2:24 | 2:04 | 2:50 | ... | 2:53 | 1:57 | 3:53 | 2:32 |
| A 7 | Pierce..... | 2 | G | 2¾ | 590 | 5:06 | 3:03 | 3:19 | 2:13 | 3:33 | 5:08 | 3:56 | 3:14 | 4:53 | ... |
| A 8 | Pierce..... | 2 | G | 2¾ | 590 | 3:12 | 2:40 | 3:13 | 2:16 | 3:19 | 4:13 | ... | 2:23 | 3:06 | 3:10 |
| D 9 | Thomas Auto-Bi .. | 1 | G | 1 | 95 | 3:19 | ... | 3:15 | 3:21 | 3:29 | ... | 3:31 | 7:24 | ... | ... |
| A 10 | Gladiator | 2 | G | 3 | 750 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| B 12 | White..... | 2 | S | 6 | 1350 | 3:16 | 2:25 | 2:42 | 2:11 | 2:54 | 2: 8 | ... | 2:08 | 4:24 | 2:55 |
| B 15 | Overman..... | 2 | S | 6½ | 1200 | 3:09 | 3:34 | 4:26 | 5:06 | ... | ... | ... | ... | ... | ... |
| B 16 | Overman..... | 2 | S | 6½ | 1200 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| E 17 | Baldwin Light Delivery Wagon..... | 2 | S | 7 | 2240 | 4:41 | 3:55 | 3:40 | 2:29 | ... | ... | ... | ... | ... | ... |
| C 18 | Holyoke..... | 2 | G | 9 | 3000 | 3:00 | 2:47 | ... | ... | 4:04 | 3:55 | 6:04 | 2:51 | 5:21 | ... |
| E 19 | Steam Truck..... | 3 | S | 20 | 7000 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| B 20 | Toledo..... | 2 | S | 6½ | 1550 | 5:49 | 3:02 | 3:27 | 4:38 | 5:38 | ... | 4:14 | 3:54 | ... | ... |
| B 21 | Toledo..... | 2 | S | 6½ | 1450 | 4:11 | 2:37 | 4:06 | 3:09 | 3:37 | 4:56 | 3:27 | ... | ... | ... |
| B 26 | Winton, semi-racer | 2 | G | 12 | 1600 | 2:14 | 2:18 | 2:45 | 2:15 | 2:56 | 4:21 | 4:37 | ... | ... | ... |
| B 27 | Autocar..... | 2 | G | 8½ | 1100 | 2:32 | 2:13 | 2:51 | 1:59 | 4:18 | ... | 5:28 | ... | 5:21 | 5:42 |
| C 29 | Gasmobile..... | 2 | G | 9 | 2100 | 2:23 | 2:44 | 2:34 | ... | 3:03 | ... | ... | ... | ... | ... |
| C 30 | Gasmobile | 2 | G | 9 | 2100 | ... | 3:54 | 2:48 | ... | 2:57 | 3:57 | 3:37 | 3:38 | 6:20 | 2:50 |
| B 32 | Winton, semi-racer | 2 | G | 12 | 1700 | 2:28 | 2:11 | 2:31 | ... | 2:56 | 4:13 | 5:40 | 2:18 | 4:25 | 4:04 |
| B 33 | Winton..... | 2 | G | 8 | 1700 | ... | 3:16 | ... | 1:48 | 3:48 | ... | ... | ... | ... | ... |
| B 35 | Foster..... | 2 | S | 6 | 1400 | 2:47 | ... | 2:36 | 1:49 | 2:38 | ... | ... | 2:39 | 4:15 | 4:00 |
| A 36 | Locomobile..... | 2 | S | 3½ | 999 | 3:12 | 2:44 | 3:10 | 2:06 | 3:35 | 5:37 | 3:54 | 2:34 | ... | ... |
| B 39 | Locomobile..... | 2 | S | 4½ | 1100 | 2:51 | 2:47 | 3:25 | 2:11 | 4:37 | ... | ... | ... | 5:47 | ... |
| B 40 | Locomobile..... | 4 | S | 10 | 1700 | 3:26 | 3:14 | 3:28 | 2:38 | 4:36 | 5:49 | ... | ... | ... | ... |
| B 41 | Locomobile..... | 4 | S | 10 | 1700 | 6:40 | ... | 2:32 | 2:11 | 3:12 | 5:15 | 4:21 | 2:37 | ... | ... |
| E 42 | Locomobile, deliv'y | 9 | S | 10 | 1700 | 5:11 | 4:36 | 4:39 | 4:14 | ... | ... | ... | ... | ... | ... |
| B 43 | Haynes-Apperson .. | 3 | G | 8 | 1850 | 3:29 | 3:00 | 3:17 | 2:43 | 4:16 | 4:46 | 3:56 | 2:38 | ... | ... |
| C 44 | Stearns..... | 4 | G | | 2000 | 3:21 | 2:50 | 3:17 | 2:37 | ... | ... | ... | ... | ... | ... |
| A 45 | Grout..... | 2 | S | | 800 | 2:59 | 2:32 | 3:03 | 2:39 | 5:19 | ... | 4:48 | 2:39 | 6:30 | ... |
| B 48 | Autocar..... | 2 | G | 8 | 1050 | 4:03 | 2:21 | 3:24 | 3:13 | 3:49 | 3:23 | ... | ... | ... | ... |
| A 50 | Geneva..... | 2 | S | 5 | 900 | 5:30 | 3:35 | 5:26 | ... | ... | ... | ... | ... | ... | ... |
| B 51 | Searchmont..... | 2 | G | 12 | 1500 | 4:29 | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| B 52 | Searchmont..... | 2 | G | 12 | 1500 | 4:28 | 3:24 | 3:12 | 3:26 | 4:56 | 5:45 | ... | ... | ... | ... |
| B 53 | Searchmont..... | 2 | G | 12 | 1500 | 3:51 | ... | ... | ... | 5:49 | ... | ... | ... | ... | ... |
| B 54 | Stearns..... | 2 | S | 6 | 1300 | 2:46 | 2:42 | 2:40 | 2:14 | 4:01 | 2:43 | 2:48 | 3:13 | ... | ... |
| C 58 | Gasmobile..... | 2 | G | 9 | 2500 | 3:06 | 2:42 | 4:05 | 2:34 | 4:50 | ... | ... | ... | ... | ... |
| B 59 | Gasmobile..... | 2 | G | 9 | 2500 | 3:04 | 2:11 | 2:24 | 2:09 | 2:54 | 4:08 | ... | ... | 4:41 | 5:58 |
| C 60 | Panhard..... | 4 | G | 8 | 2200 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| C 61 | Packard..... | 2 | G | 12 | 2350 | 2:37 | 2:16 | 2:50 | 2:09 | 3:03 | 3:11 | ... | ... | 4:21 | 8:28 |
| A 63 | Duryea, 3 wheels... | 2 | G | 8 | 900 | 3:35 | 3:17 | 2:37 | 1:55 | 4:52 | ... | 5:12 | ... | 5:18 | 4:07 |
| D 64 | Orient Motor Bicycle | 1 | G | 2¾ | 175 | 3:24 | 3:38 | 2:01 | 2:01 | 2:49 | ... | 6:12 | 2:12 | ... | ... |
| C 65 | Century..... | 4 | S | 9 | 2100 | 3:58 | ... | ... | 4:26 | 4:46 | 6:48 | 4:14 | 2:45 | 5:31 | 4:01 |
| A 66 | Knickerbocker..... | 3 | G | 5 | 700 | 2:36 | 1:35 | ... | ... | ... | ... | ... | ... | ... | ... |
| D 67 | Indian Motor Bicycle | 1 | G | 1¾ | 85 | ... | ... | ... | ... | ... | ... | ... | ... | ... | ... |
| B 68 | Columbia..... | 2 | G | 4½ | 1675 | 3:46 | 3:56 | 3:22 | 2:23 | 4:43 | 5:44 | ... | ... | ... | ... |
| B 69 | Riker..... | 4 | G | 16 | 1950 | 3:55 | 3:41 | 5:14 | ... | 5:44 | ... | ... | ... | ... | ... |
| A 72 | De Dion..... | 2 | G | 5 | 900 | 2:50 | 2:32 | 2:45 | 2:11 | 2:59 | ... | 3:29 | 2:46 | 4:41 | 3:28 |
| A 73 | De Dion..... | 2 | G | 5 | 900 | 3:18 | 2:31 | ... | ... | ... | ... | ... | ... | ... | ... |
| A 74 | De Dion..... | 2 | G | 8 | 1000 | 3:07 | 2:35 | 2:48 | 7:06 | 2:51 | 3:49 | ... | ... | ... | ... |
| A 75 | De Dion..... | 2 | G | 5 | 900 | 3:01 | 2:19 | 7:23 | 3:04 | ... | ... | 3:20 | 2:35 | 6:49 | 3:57 |
| B 76 | Reading..... | 2 | S | 6 | 1200 | 3:23 | 3:18 | 6:48 | 4:47 | 5:19 | 5:29 | 5:26 | 3:30 | ... | ... |
| C 77 | Gasmobile..... | 2 | G | 9 | 2100 | 2:53 | 2:36 | 2:44 | 2:31 | 3:36 | 5:35 | 2:45 | ... | 4:22 | 2:58 |
| B 85 | De Dion..... | 2 | G | 6 | 1500 | 2:45 | ... | 2:23 | 2:18 | ... | ... | ... | ... | ... | ... |
| D 87 | Regas Motor Cycle | 1 | G | 1½ | ... | 4:06 | 3:28 | 4:12 | 5:13 | ... | ... | ... | ... | ... | ... |
| D 88 | Regas Motor Cycle | 1 | G | 2½ | ... | 4:08 | 3:40 | 4:09 | 5:12 | ... | ... | ... | ... | ... | ... |
| D 89 | Regas Motor Cycle | 1 | G | 1½ | ... | 3:48 | 4:57 | 3:45 | ... | ... | ... | ... | ... | ... | ... |

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control, to the care of imported mechanics, he handled his own machine all the way, directed and superintended its care at the controls and saw to it that it was overhauled at every stopping place. He carried with him a mechanic on every stage, while two others traveled by train. But remarkable as was the performance of the big French machine, the work of the principal Americans was even more so. Taking into consideration the fact that the Panhard, with its 2,500 pounds had 30 horsepower to propel it and that the Packards and Columbias, varying in weight from 1,800 to 2,200 pounds, had but from 4½ to 14 horsepower, who shall say that America is behind France in construction? The performances of the Columbia carriages were, perhaps, the most remarkable of all. They went through the ordeal with little trouble, without the everlasting tinkering to which some of the others were subjected. With 4½ horsepower their performances will prove, when the official figures are ready, to have excelled those of many others with twice, and in some cases three times, the power. In one case only was there anything akin to failure of any of the American heavyweights, and that was due to the fact that they were the entries of owners, and not the manufacturers, and were in care of unskillful operators. Many a time during the week the prediction was made that in another year the purchase of foreign machines would cease. Perhaps the change may not come quite that soon, but that it is already within hailing distance is certain.

NO SERIOUS ACCIDENTS.

Perhaps its freedom from accident was one of the most remarkable features of the run. Considering the disreputable roads, the speed of the vehicles and the curiosity and ignorance of the country people, it is a truly remarkable fact that no one was seriously hurt. Mr. Astor ran down a cyclist before he cleared New York, and later one of the machines just touched a woman, with no more serious result than a torn dress. That was all. Could there be better evidence of the perfection of control of the vehicles? Imagine eighty spirited horses, urged to full speed, and the result on the rural population! The authorities of New York state acted wisely in setting the limit at 15 miles, a fact well proven by the re-

sult of the run, which may be used to advantage by those who have occasion to talk with legislative bodies in other states.

No arrangements had been made for supplying either traveling correspondents or local newspaper men with information. *MOTOR AGE* learned of this early, and immediately took steps to remedy the omission. Press headquarters were established at every control and pains were taken to furnish local newspapers as much and as reliable matter as possible. In this work the staff received the assistance of members of the committee, notably Messrs. Whipple, Scarrett and Secretary Butler. The result was that instead of exaggerated stories of accidents, which would have injured the industry, the local and New York papers presented reliable reports, devoid of sensation and calculated to impress readers with the dignity of the event. Manufacturers made free use of the bureau at all controls.

HOW THE BOSSES WORKED.

The contest was a great leveler of persons, and it was noticeable that some of the more important people were the most cheerful under adverse circumstances. There are many owners who take as much delight in their machines as does an engineer in his locomotive, and who, in consequence, are not at the mercy of a lot of breezy French chaffeurs. Men of this class were seen, time after time, on their backs in the mud doing their full share of the work with their mechanics. In strong contrast—and to the undeserved discomfiture of the manufacturers whose machines they used—there were others whose sole interest in the event seemed to be personal aggrandizement. The correspondents and artists quickly discovered a few people of this class who could see a camera a mile away and never failed to pose gracefully and smile sweetly when one happened to be turned in their direction.

THE RUN DECLARED OFF.

When the contesting automobilists, tired from an awful strain which had lasted five days, during which time they had gone through hardships which would put the most industrious laborer to the blush, arrived at Rochester Friday afternoon and evening the pleasurable anticipation of a final rush into Buffalo was spoiled by the dread that the contest might have a differ-

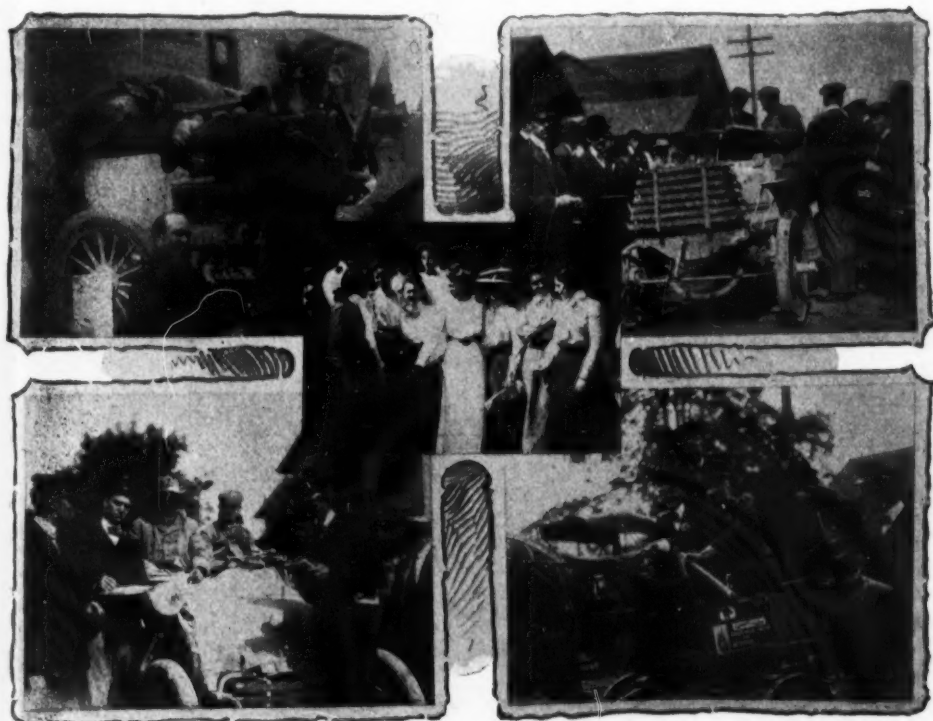
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ent ending and that the change might be wrought by the passing of the nation's chief. Late in the evening the committee met and of course decided that, should the president die during the night, the run would end at Rochester. The president died during the night. Many toiling mechanics heard the bells toll and dropped their tools, certain that the contest was at an end. Word to that effect was passed around early in the morning and the automobilists scattered to the four winds. Some shipped their machines. Others, probably a majority, went on to Buffalo, entering by any route they pleased, and were swallowed up in the crowd. All computations will be made as if the event had been from New York to Rochester, 394.3 miles, or exclusive of the distance from Peekskill to Nelson Hill, from which the times were figured, 391.4 miles.

The official returns will not be prepared

until all the officials return to New York. It is not improbable that the publication of the official figures and list of awards will be delayed at least two weeks. The tables published in this report were prepared by the representatives of MOTOR AGE. They will be checked over with the books held by contestants and some changes may be necessary. They are presented here quite unofficially that the reader may obtain, without waiting for the official statement, some idea of the performances of the machines.

The controls were to have been kept open in the morning from 11 to 3; in the evening from 4 to 9. They were mercifully kept open until later hours at several controls else, as may be seen from the times, the percentage of those who missed one or more controls would have been much larger. The committee doubtless considered it wise to make this concession on account of the extraordinary meteorological conditions prevailing.



Dr. Martin Entertaining a Farmer.

Bishop Signing Time Book at Lyons.

Interested Belles at Lyons.

Alex. Fisher at the Oneida Control.

A One-Horse Party.

POUGHKEEPSIE TO ALBANY

Albany, N. Y., Sept. 10.—The story of the endurance run, in detail, was sent off in time for the last issue, and a general summary of events was wired up to Wednesday night. Today, the second of the trip, has shown that the purposes of the contest will be well served. The weak brethren have already fallen away and the tail-enders dragged their weary bones to the finish this evening looking as if they were ready to cry enough.

The start this morning from Poughkeepsie was at 8 o'clock (the usual starting time), and in the little Duryea with Harry Burhans the writer was soon rolling off miles amid a perfect cloud of dust, and arrived at the lunch control at Hudson, 40 miles away, at 11 o'clock.

The run from Hudson to Albany (30 miles) was easy, notwithstanding the poor roads, and a good shower laid the dust toward the end of the journey. The two three-wheelers in the test arrived here in good shape, the Duryea being sixth in, and its dash by the big machines both amused and astonished many. The first bunch of 12 arrived about 3 o'clock, and had to wait 15 minutes for the control to open.

NO SCHOOL THAT DAY.

An amelioration for all complaints was the glad acclaim of the populace which greeted the chaffeurs with as much heartiness as the people of Rome are said to greet their warriors on their return from victory. Schools were dismissed so that the scholars could see the new sport, and right well did they perform their part. Bouquets of wild flowers, oftentimes with the names of the donors and recipients, fell into the laps of those seated in the vehicles.

THERE WERE SOME BREAKDOWNS.

A chapter of accidents unfortunately took the edge off the enjoyment of many today—for many are enjoying the affair immensely, and a look at the smiling faces of Dr. Martin and Elliott Evans was a cure for any attack of blues. When your machine crashes into a treacherous ditch at a sharp curve; when your vehicle drops through a rotten country bridge; when you strike a hollow and a rise in the road and bound into the

air several feet and break an axle on returning to earth—then you get the blues. This happened today to an Overman, a Searchmont and a De Dion, and yesterday to a Peirce, but old "tried and true" was soon in repair and in the running, full cry, in two hours. The De Dion had a nasty lot of accidents. Manager Gallaher discharged his man for carelessness, and thereafter the Searchmonts came through all right to night.

The test has resolved itself into a race, as predicted before the start, and that has had a lot to do with weakening a good many of the original starters. Excuses are quite numerous, and the ingenuousness of some of them challenge admiration. No one blames motor or the quality of the gasoline, strange to say, but everything else gets blame. Some of the smaller carriages take umbrage at the big gasoline machines, which, many declare, took liberties in crowding, one man asserting that a big machine scared him into a ditch, where he landed upside down. With the aid of farmers the machine was again put on its feet, and darted off for the control, 20 miles away.

The big machines seemed to be perfect dust raisers. A Winton without a muffler hammered along with harsh exhaust report, which seemed to blow all the dust from the road into the air.

The hero worshipper's reverence for the "inimitable" French chauffeur has undergone a rough shock. We have no word to utter against the skill, the nerve or the daring of our transatlantic friends, but how fully developed those qualities are, even at this early date, in American operators, was demonstrated to the limit. There were no chances, short of suicide, they did not accept without hesitation. To those who have never seen the hills, the mudholes, the washouts and the broken bridges along the line of the endurance test it is impossible to convey an adequate idea of what these men went through. To the Frenchmen they were a revelation. A number of them declared to MOTOR AGE men that never had they seen, in their own country, roads so bad as the best they passed over after leaving New York.

DAY OF DANGER AND DARING

Herkimer, N. Y., Sept. 11.—There were some owners who failed to answer to the roll call this morning, but on the whole we were a contented party as we left the rink at Albany. Eventually it proved the worst day of the trip, as is evidenced by the fact that more vehicles were disabled than any other, while all times were much slower. When we left the sun was shining, the sky clear and everybody was in the best of spirits. It was believed by many that they had experienced the worst that could happen and that their vehicles, having stood up that far, would pull through in good shape. The chauffeurs had had a good time, had been showered in several towns with flowers, and the future looked bright indeed. Good time had been made and there was every indication that the worst was over.

ASKED FOR RAIN AND GOT IT.

Leaving Albany by way of Lake avenue, the vehicles ran out the Northern boulevard to the main road to Schenectady. The roads were dusty and some of the operators expressed the hope that a little rain might fall to lay the dust. They got all they wanted and more. Just as the first vehicles reached Schenectady the sun hid himself behind clouds that came up from the west, and rain began to patter. Rubber coats and lap robes were taken from their pockets and precautions taken to protect the electrical parts from the wet. The rain increased, and presently came down in a steady downpour. The storm did not last long, however, and at Fonda, the noon control, apparently passed away.

After lunch in Fonda the operators bought fresh supplies of what was supposed to be gasoline, but which subsequently proved to be a mixture of kerosene and gasoline. Whether this was intentional on the part of the supply man who thought he saw a chance of increasing his bank account at the expense of the wealthy New Yorkers, or whether the gasoline was taken from the cars in a tank wagon that had previously held kerosene is not known. It is due to the compilers of the official blue book to state that they have no station at Fonda.

A CONVULSION OF NATURE.

As the first vehicle left the town at 1 o'clock it began to rain again. It started

with a gentle drizzle, which became heavier as the afternoon advanced. The road ran alongside the tracks of the New York Central railroad, sometimes being on a level with the tracks and at times 200 to 300 feet above them on the hills which bank the sides of the beautiful Mohawk valley. The rain had gradually increased to a steady downpour, and the sky was getting blacker and more lowering every minute. The storm changed the usual peaceful valley into a black menacing country, which reminded one of Dante's valley of darkness. Presently a vivid flash of lightning illuminated the Heavens, followed by a roar of thunder that drowned the noise of the motors despite absence of mufflers, which went reverberating across the hills, rapidly followed by sheets of flame that played about the trees lining the path of the wagons and seemed to strike the very ground under them.

SOME DANGER IN TRAVELING.

The rain was now coming down in sheets and the road was like a quagmire, but with a recklessness that was necessary to make time in nearly every vehicle the operators kept their engines running at full speed. The result was that the wagons, with their wheels spinning around in the paste clay, slewed from one side of the road to the other, pointing ahead, sliding sidewise and at times turning completely around and pointing in the direction from whence they came. At times the rain would lighten up, only to come down again with a force that blurred the goggles of the chauffeurs, necessitating their removal, and stung eyes and faces like a desert sand storm.

The leather seats of the carriages held pools of water, in which the riders slushed, while the wheels threw up mud and mire that covered them from head to foot.

STEAM CARRIAGES DID WELL.

The steam carriages, being the lighter, were on this day less affected by the trying conditions than their more heavy gasoline rivals, but they too had trouble. The gasoline supplied at Fonda was so poor that even they had difficulty in keeping up steam, but on the whole they did better than the gasoline machines. The latter were troubled not only by the poor fuel, which in their case was a serious handicap, but the

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water which saturated everything caused short circuits and failure of the sparking devices occurred in numerous instances. Running along frontways, sidewise, backwards, one instant being threatened with a turn-over in the ditch and the possibility of going over the side of the hill to the Mohawk river below and the next with a general smash up by striking a foot-high break-water, which would send the occupants of the seats high in the air, the riders had the experience of their lives. Truly it was an endurance contest, not only of machines, but of men, both physically and mentally, and for years to come, when two or more of the contestants get together, they will talk over their experiences like veterans at a camp fire.

DARING OF THE OPERATORS.

When towns were passed the people who had assembled to see the carriages were massed under awnings at corner groceries or clustered on protected verandas. There were no farmers educating their horses by holding them to see the wagons go by; no throwing of flowers. The people smiled and waved handkerchiefs at the bedraggled, mud-bespattered chauffeurs, but they were not going to get wet.

The hills on this trip were many and of gear racking grades; one beyond Nelliston was 19 per cent, with a surface that defied the driving wheels to take hold, and the operators who took chances—and they practically all did not only this day but every day—only succeeded in getting up by running with one driving wheel clinging to the rocky side of the road and tipping the carriage at an angle that threatened to turn it over with every push of the piston.

LONGEST SEVEN MILES ON RECORD.

The official guide book said that Little Falls was seven miles beyond St. Johnville, but every man on the trip agrees that it was more like 27 miles. The writer, who was the guest of Alexander Fisher, superintendent of the Automobile Co. of America, is of opinion that it is more like 70 miles. The 7 miles seemed endless. Meeting a farmer before reaching St. Johnville, he answered the shout of "How many miles to the next town?" with "Seven miles." The wagon was traveling at a lively clip and had overtaken several carriages that had started before it, but 10 minutes later the same question, yelled to a small boy, received

the same answer. Further on we asked of a man in a buggy, who had turned into the ditch to avoid being hit. He brought up seven fingers. "I guess they are moving the town away from us," yelled Fisher, making himself heard above the noise of the unmuffled exhaust and the rattle of the carriage over the so-called road. It was still raining, but not so hard as before, and far over the valley the sun could be seen trying to get a peep at the racing wagons with one patch of black cloud several miles beyond which was emptying its reservoir on an already waterlogged township.

WARNED BY THE POLICE.

Little Falls was reached at last and as the autos struck the main street were cautioned by the local police to slow up. Nobody paid much attention to the order. The approach to the town was under a railroad bridge and up a 12 per cent grade. The bridge was lined with spectators, who apparently had taken the point of vantage to see the vehicles negotiate the rise. Down the brick-paved Main street, between lines of closely packed Little Falls natives, the vehicles dashed, taking advantage of the small stretch of good pavement to make up the time lost. After leaving the town the road again resumed its rutty, muddy character, with the usual sliding accompaniment. As before, all the vehicles were traveling at top speed, dashing down hills and overtaking competitors whenever possible. It was at times amusing to see a vehicle approach another contestant, blow the horn for right of way, and when almost up to have one cylinder refuse to work and become unable to take advantage of the opening presented. At times the operator of one carriage would learn to identify the tracks left by the tires of a competitor and judge by their depth and the amount of rain in them how far he was ahead.

SCARED BY A WASH-OUT.

Between Little Falls and Herkimer while descending one of the steep hills at top speed several of the chaffeurs sustained a scare that under any other circumstances would have impressed them, but in the rush to make fast time did not appeal to them until after they had a chance to think of it. The hill was full of turns and the vehicles rushed around as though they were traveling on a straight, level boulevard, depending on their brakes to take care of them if

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necessary. Suddenly, on turning a corner at the bottom, it was seen that a small stream crossed under the road and where a bridge had formerly been was stretched a rope, the bridge having been washed away and a temporary crossing built a few feet further down the stream. Several of the operators did not see the temporary structure and when they saw the bridge down thought their last hour had come. Late in the evening, after darkness had fallen, a man with a white lantern was stationed there, which had the effect of increas-

ing the danger, as the operators of the belated vehicles, seeing, the white light thought that the road was clear.

Another hill of the twisting variety but with turns that were lined on one side by a wall of trees and on the other by a drop of a hundred feet led into the city of Herkimer, and it was a tired, dirty, mud-be-spattered procession that finally reached the town. That a good roads meeting was held in their honor that evening, with a band of music thrown in, had no interest to those chaffeurs who had been responsible for their vehicles during the day.

HERKIMER TO SYRACUSE

Syracuse, Sept. 12.—Fifty-two travel-stained automobilists left Herkimer this morning. The strain of the flood and wind of the day before had left its mark on the chauffeurs. Stiff joints and sunken eyes told plainly of the battle with the roads and the elements. The heavens were dark and weeping as the word "Go" was given the leaders, who raced off as if they were after a mile record. An accident to a big mobile (which was running a day ahead as a sort of pilot) at Mohawk village, through coming into contact with a newly laid street car rail, induced the officials to place a danger flag at the spot, and it was well they did, for notwithstanding the precaution, one break at least resulted.

MORE OF THE SAME.

The rain poured in a little while and the going was simply awful, mud and water being a foot deep in places. Several inquired while going through Ilion whether boats were used on the "roads" there. Troubles commenced early, but it was a complete wonder how few fell by the wayside. A brief relief was had while going through Utica, but the good was swallowed up by extra vileness after leaving.

M. R. Hughes, of Cleveland, met with a narrow escape at Amsterdam, which his good machine, a White, came out of it whole. In turning a curve the greasy condition caused the machine to swerve completely

around and Mr. Hughes found himself facing New York. He was soon going again and to the general surprise landed second in Syracuse.

The writer reached Oneida late owing to trifling accidents, one being an introduction to a fifteen-foot ditch. There were others who had similar experiences while attempting to skirt the seeming bottomless mire of the "road" center. One little stretch between Ilion and Utica alone can be termed a road, and that was first class. It was built by the state and county of Herkimer jointly to serve as an object lesson to the farmers.

GOOD WORK OF THE STEAMERS.

The run of Thursday seemed to prove one thing, and that is that light steam machines do excellent work in heavy going, as a lot of light steamers rushed into Syracuse in close pursuit of Bishop's big racing Gasoline, followed by the heavier Gasolines.

C. A. Benjamin, of this city, slipped a cog in his attempt to reach his home first, as he had some trouble, but he landed fifth amid a hurricane of cheers.

The "roads" between Oneida and Syracuse were a little better, but bad enough, in all conscience. At Syracuse the local Automobile club dined and wineed some of the members of the Automobile Club of America, and the Syracuse club, and all went to bed feeling that a most strenuous day had been checked in.

ON THE FINAL JOURNEY

Rochester, N. Y., Sept. 14.—This was another day of trial and tribulations. More rain fell between Syracuse and Lyons, the noon control. At 8 o'clock the contestants lined up below the Yates hotel and the trouble started promptly when David Wolfe Bishop's big Panhard began roaring its protests of being kept in leash. The next moment a Panhard was jumping along the railroad avenue, faster than any Central train has ever dared go.

The homestretch loomed into distant view to the nervous, mud-bespattered voyagers. Some belated ones who had arrived late at Oneida and had stopped there over night, had taken advantage of the early morning and had reached Syracuse in time for the start. Two or three machines returned for new tires after they started, a Winton and Columbia being among them. The Winton had two broken wheels. Those who trained, together with the officials, rushed for the 10:25 train and got off at Lyons, the noon control, arrangements having been made for a special New York Central stop there. Bishop was the only one in, arriving at 4:21.

IN MONTEZUMA SWAMP.

A blinding rain storm struck the unlucky chauffeurs in front, and soon they were wallowing in a place rightly termed Montezuma swamp. Curses on the negligence of state, county and citizen arose from the party as their machines battled with the black, sticky mud, which clogged vehicles, sprockets and chains so that operators had to dismount and, with their hands, scrape the stuff off. At times the vehicles skidded and threatened ditching. There are a score of the aforesaid swamps, a series of salt marshes. Through Savannah, Clyde and Berlin to Lyons the roads were somewhat better, but none of them would take a good roads prize.

GASOLINES SCORING AGAIN.

At Lyons, the noon control, the entire town turned out to see the automobiles. Here the gasoline vehicles commenced to assert themselves and escaped from the cloud of the day before when the steamers rushed in, five out of the first six. Out of the first fifteen checked today ten were gasoline.

On the road Bishop overtook a farmer

driving the same way and stopped twice to soothe the horse. Finally the horse bolted and overturned the rig. The shafts were broken and the equine raced along toward Bishop, whose chauffeur caught it on the bank of the Erie canal. In the struggle man and horse rolled down the embankment. The horse fell into 15 feet of water and struck out toward Syracuse. His owner did not seem to care whether he drowned or went on to New York, as he refused any compensation and assured Mr. Bishop that he was not to blame.

A TORN DRESS AND TEARS.

Coming into Lyons C. R. Greuter upset Miss Emma Wickman, who was traveling in the same direction on a bicycle. With the exception of a torn skirt she seemed all right. Mr. Greuter stopped, tendered his services and gave his card to the girl, who told the writer, who saw the accident, that she expected a new dress. Forty-two had reached Lyons when the control closed at 3:40.

From Lyons the road toward Rochester was better and the chauffeurs were in better spirits. From Lyons to Neward, about 9 miles, the roads were fair; then middling to Palmyra. At the latter place a farmer said that the best road had not been chosen as a detour to Egypt, 15 miles away from Palmyra would have been the best. Fairly good time was made through here, notwithstanding the poor roads.

A crowd had gathered at the summit of a hill about 3 miles out of Syracuse as early as 3 o'clock. They were none too soon, for Bishop's machine, under full speed, as usual, reached there at 3:15. There was a long wait, but after that machines arrived regularly. Some came in as late as midnight.

THE FINAL MIDNIGHT PREPARATION.

We visited the storage place at midnight and the scene was one never to be forgotten. The factory mechanics and chauffeurs were working like beavers, and flitted around with lamps, silently, like so many jack o' lanterns. It was "Buffalo or bust" with many if not all of them, and they did not intend that any part should be found wanting when the day dawned on the last stage of the battle.

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The employers and makers hovered around their men and gave orders in low tones to escape possible listeners.

Many worked until bells commenced to toll solemnly, and then a sharp grief filled every breast, and the thoughts of all turned to Buffalo in a different way. For the tolling bells told of the passing of a great soul to his eternal rest. Tools were dropped and there and then ended the final preparations for the final stage, which, as we learn this morning, will not occur.

These Arrived at Buffalo

Among the wagons which went through to Buffalo and were stored at the automobile station on North street were the following: G. B. Pettengill's Columbia gasoline, E. H. Cox's Columbia gasoline, Dr. Martin's Packard, K. Skinner's De Dion, C. E. Duyrea's four-wheeler, W. N. Browning's Haynes-Apperson, Alex. Fisher's gasmobile, G. H. Shattuck's Panard, G. R. Greuter's gasoline phaeton, L. F. Clark's autocar, William Morgan's autocar, D. W. Bishop's Panard, A. H. Benjamni's locomobile, C. Page's locomobile, C. B. Galaher's two Searchmonts, St. Louis Motor Co.'s gasoline carriage, Chas. Grout's steam Stanhope, C. D. Fowler's Knox, White Sewing Machine Co.'s four wagons, Geo. N. Pierce Co.'s two gasoline runabouts, C. H. Metz's motorbicycle.

Night at the Storage Stations

Among the most interesting sights of the trip were the nightly scenes in the storage stations. When the wagons arrived at a control the operator signed his name in the book kept by the red-capped official time keeper, had his time entered in a book kept by himself, and immediately went to the storage station for the night. In these stations the machines were lined up side by side, irrespective of class or size. Most of the operators returned to the barn after supper and overhauled their vehicles preparatory to the next day's run. This work was, in several cases, an all-night job, and few of the operators averaged more than 5 hours' sleep during the week. In a number of cases the machines had to be almost rebuilt. One steamer had a new engine put in and other changes made; another wagon had new wheels fitted; another new tires, and so on.

To one who had accompanied the run from the start the appearance of one of these barns was of great interest. The first impression one received was of the extreme stillness, and this notwithstanding the fact that men were hammering and talking and making the usual noise of a machine shop. This deception was due, no doubt, to the presence of so many still

The order of arrival at Rochester, the last stage of the journey, was as follows:

| No. | Drivers. | Make. | Time |
|-----|----------------------|--------------------|------|
| 1 | David Wolf Bishop | Panhard..... | 3:45 |
| 2 | J. W. Packard..... | Packard..... | 4:07 |
| 3 | A. Benjamin..... | Locomobile..... | 4:15 |
| 4 | E. Apperson..... | Haynes-App'rsn | 4:20 |
| 5 | W. A. Hatcher..... | Packard..... | 4:32 |
| 6 | G. Pettengill..... | Columbia..... | 4:46 |
| 7 | Southworth..... | White..... | 4:47 |
| 8 | E. S. Cox..... | Columbia..... | 4:53 |
| 9 | Park Densmore..... | Foster..... | 4:59 |
| 10 | Alex Fischer..... | Gasmobile..... | 4:59 |
| 11 | Waldon..... | Foster..... | 5:01 |
| 12 | Hughes..... | White..... | 5:04 |
| 13 | W. H. Winters..... | Am. Bicycle Co. | 5:08 |
| 14 | R. H. White..... | White..... | 5:09 |
| 15 | | Haynes-App'rs'n | 5:09 |
| 16 | Raymond..... | Lane Surrey..... | 5:17 |
| 17 | H. R. Shattuck..... | Panhard..... | 5:20 |
| 18 | Percy Owen..... | Winton..... | 5:23 |
| 19 | | Gasmobile..... | 5:24 |
| 20 | Demming..... | White..... | 5:30 |
| 21 | Dr. Martin..... | Packard..... | 5:31 |
| 22 | Mitchell..... | Locomobile..... | 5:50 |
| 23 | Lounegner..... | De Dion..... | 5:51 |
| 24 | P. P. Pierce..... | Pierce..... | 6:05 |
| 25 | Robinson..... | Robinson..... | 6:22 |
| 26 | S. Ripley..... | Gasmobile..... | 6:30 |
| 27 | J. C. French..... | St. Louis..... | 6:36 |
| 28 | Lewis..... | U. S. L. D. A. Co. | 7:08 |
| 29 | C. R. Woodin..... | Century..... | 7:29 |
| 30 | Fowler..... | Knox..... | 7:34 |
| 31 | C. J. Field..... | De Dion..... | 7:37 |
| 32 | H. Burhans..... | Duryea..... | 7:47 |
| 33 | Knowles..... | Locomobile..... | 7:48 |
| 34 | A. L. McMurtry..... | Packard..... | 7:51 |
| 35 | C. Greuter..... | Holyoke..... | 8:24 |
| 36 | M. P. Owen..... | Columbia..... | 8:45 |
| 37 | L. Clarke..... | Autocar..... | 9:16 |
| 38 | A. Dow..... | Winton..... | 9:19 |
| 39 | H. Curtis..... | Toledo..... | 9:25 |
| 40 | T. W. Clark..... | Locomobile..... | 9:39 |
| 41 | J. M. Satterfield .. | Locomobile..... | 9:45 |

The following finished after the control closed:

Grout Bros., steam Stanhope; two Searchmont Phaetons; a Columbia Wagon; Wally Owen in a Gasmobile; W. L. Lingle in a Reading; a Pierce wagon and Wm. Morgan in an Autocar.

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vehicles after one had become accustomed to associate them with noise and action. Electric light bulbs attached to long wires accentuated the general effect of the buildings and looked like so many fireflies. Suddenly somebody would start an engine to test its running, and the noise of the mechanism would resound throughout the structure with the furious hiss of steam or the more resonant sound of the gasoline explosion. If it happened to be late, a silent Frenchman would be seen sleeping on the seat of Bishop's powerful Panard or the doors would open to admit some belated contestant, who would be received with queries from the workers present as to the cause of his delay.

The Rural New Yorker

While one of the carriages was traveling between Syracuse and Lyons the chain slipped off the rear sprocket and a stop was necessary. An old farmer and his family, who had been watching the vehicle rush by from the veranda of a weather-beaten house, came running down the hill, followed by three or four children and several women. One of the latter kept yelling: "Don't go till I get there; don't go till I get there!" Arriving breathless at the wagon, she insisted on putting the children on the seat while the carriage stood, explaining that none of them had ever been so near a "hossless kerridge" before and did not expect to again. The youngsters crowded over the carriage while the old folks looked on, feeling the cushions, examining the riders, and passing opinions as to the probable cost of the vehicle, one guess going as high as \$300. Suddenly the operator gave a turn of the crank, and as the motor started with a rush the ruralites looked aghast for a minute, and then tore, pell-mell, up the hill, the children and the women screaming and the old gentleman trying to keep up as well as his stiff joints would let him. On reaching a safe distance the crowd watched the vehicle disappear, apparently in the expectation of seeing it go into the air any minute.

Non-Slipping Devices

Only one carriage in the run was provided with any special device to prevent the slipping of the driving wheels, and that was entered by an individual, and not a manufacturer. When the vehicle, a 16-

horsepower Packard, owned and operated by Dr. Martin, left New York it carried a non-slip device which was recently described in this paper. After the experiences on the muddy run from Albany to Herkimer it was apparent that some device was necessary on the driving wheels, and on Thursday nearly every wagon showed up with rope tied around the tires. Dr. Martin then showed what his mysterious strap arrangement was intended for. It consisted of two straps fastened to the side of the wheels by buckles and having, every six inches, a strap running over the tread of the tire, thus affording a grip on the soft surface of the road. The ropes wore through after a few miles had been ridden, but Dr. Martin's came into Syracuse with them on and apparently in good condition.

A Leveler of Persons

Adversity has brought many men to their senses, and the late run proved how thoroughly the same thing may happen on an automobile run. Wet, muddy, bedraggled and disheartened, some of the lordly men whose precious moments at home are all too few to deal on an equal footing with some of the more lowly, bowed meekly to the inevitable, and became aware of the old proverb that "pride goeth before a fall."

Narrow Escapes on the Road

D. E. Rianhard, secretary of the Overman Automobile Co., had a narrow escape from a fatal accident Tuesday morning. He was in one of his company's wagons, accompanied by F. Gordon, and while rapidly descending a steep hill beyond Poughkeepsie the vehicle struck one of the "thank-you-mams," which has proved disastrous to so many wagons, and was ditched with sufficient force to smash the running gear. Mr. Rianhard was thrown violently out of the carriage, and in trying to protect himself by throwing his arm over his face struck his chin against his arm on landing and his teeth cut a deep gash in his lips. He bled profusely, and was treated by a doctor in Poughkeepsie, where he returned for attention. His companion escaped unhurt. Mr. Rianhard was in Buffalo on Sunday, and was congratulated on his escape.

C. B. Gallaher, general manager of the Searchmont, was kept on the jump all through the week. He entered three of the

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company's machines. Just outside of Yonkers the first machine came to grief, owing to the breaking of a steering knuckle. The machine was left in Yonkers. At Cold Spring a second machine, while speeding along at a lively clip, struck a waterbreak on the road, bounded up in the air and came down with sufficient force to break the solid $1\frac{1}{2}$ inch trussed front axle. The occupants of the carriage were unhurt. Mr. Gallaher received word of the accident at Poughkeepsie. He immediately hustled back, took the front axle from the first wagon, fitted it to the second and on Saturday two of the three Searchmonts arrived in Buffalo, a percentage of survivors which was exceedingly gratifying.

Much sympathy was expressed for C. J. Field on Tuesday evening. The fine showing of the De Dions had all along aroused considerable comment, but on Tuesday unavoidable accidents temporarily disabled two of the four.

Just outside of Red Hook the machine in

which Mr. Field and Leslie Rand were riding came up to a steam wagon, the operator of which had slowed down on a bridge. He motioned to Mr. Field to go ahead. The latter did so, and just as he was turned saw there was another vehicle right ahead. It was a case of running into the vehicle or taking the wire fence at the side of the road. Mr. Field made for the latter, crushing through it and landing right side up on a meadow several feet below. The front axle was bent, but did not break. Neither Mr. Field nor his companion was hurt, although they were considerably shaken up. A short time afterward the De Dion supply wagon came along, and repairs were made which enabled Mr. Field to reach Albany about 7 o'clock. Another De Dion machine met with an accident between Hudson and Albany. Kenneth Skinner was the operator, accompanied by J. Hurlbert, while trying to pass another contestant the machine was ditched, and both occupants thrown. Skinner escaped with a few bruises.



EARLY ARRIVALS AT SYRACUSE.

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and his companion sustained a sprained leg. The machine arrived in Albany late that evening. Mr. Field met with what looked at first to be a severe accident on Friday while approaching Lyons for the noon control. His vehicle struck a rut, and the bolts holding the front axle were broken. Mr. Field was thrown out, landing on his shoulder, but fortunately no damage was done. With the gameness that characterized his work all through the week he immediately made repairs, and arrived in Lyon before the control closed. He laughingly referred to his accident as a "little spill."

Some wonderful things happened the first two days, but the prize for the most wonderful was awarded to Mr. Fowler, of the Knox Automobile Co., who through a mass of difficulties was forced over a bank. The little three-wheeler landed upside down. To the surprise of all, Fowler came racing into the next town nearly on time.

The White Sewing Machine Co.'s vehicles did splendidly all the way, met with few mishaps, and were always well up in front. A runaway was caused on Tuesday through the starting lever catching in Mr. Hamlin's coat. The machine darted backward and brought up against a barn without damage. In its flight it came nearly putting one of the Age men out of business, striking him in the back, but fortunately he fell out of the way.

On Friday the Stearns steam carriage, while making a rapid turn to enter the stable at Batavia, struck an obstruction, and the next minute was down with a broken axle.

The Overman carriage, which had a smashup, seemed to have more than one life, as it got to Albany Tuesday night, and continued on the run.

Miscellaneous Gleanings

Of all the club men on the run, no other, perhaps, was quite so popular with all hands as H. W. Whipple. That gentleman had been a hard worker for the event and, though his own machine was put out of the running early in the contest, he stood by the ship to the end. Those who saw his breakdown tell of it with great amusement despite their sympathy for Mr. Whipple. He had with him no less than three Frenchmen, who discussed the case with great energy and with many gesticulations the

while he stood by without the slightest idea of what they were talking about or whether he could go on or not, pending their verdict. In the end they told him the machine must return to New York.

The Hartford tires on the Mobile Rapid Transit wagon, which went through from New York to Buffalo ahead of the tour, were in splendid shape. Randolph Walker stated that he had not even a puncture.

The little three-wheel Knox machine covered itself and its manufacturers with glory. It was operated by C. T. Fowler and did not miss one control throughout the week, which was remarkable considering the condition of the roads. It kept well up with the high powered machines and at times made some of them hustle. On Friday, near Palmyra, it was thrown into a ditch and turned completely over. Those who passed it thought it was out of the running for the day, but in a short time were surprised to see it coming along with characteristic regularity apparently not injured in the least by the accident.

One of the principal failings was the inability of the club to supply information to representatives of the daily press. There were times when some prominent member of the club would cheerfully say: "Mr. So-and-so, you might say in your report that I," etc., etc. When approached by the same newspaper man next day the member was quite likely to say: "Ah, yes; let me see—what paper do you represent?" For details of names and other particulars, consult the New York papers, whose reporters carefully omitted any mention of men thus snobbishly disposed.

One of the funny men of the press should immortalize the hired French chauffeur and his meek American employer. It is as good as a circus to watch the Frenchman boss things and read the riot act to the man who pays his salary. He looks with disgust upon the average American, and does not credit the latter with the first rudiments of the art of automobilism. The Frenchman talks to his boss in an authoritative way and one would be apt to take him for owner. He excitedly denounces American equipment, especially tires.

Part of the success of the Columbia and Packard machines is due, no doubt, to the fact that racing was almost entirely tabooed. The operators are evidently under

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instructions to carry out the spirit of the rules laid down by the club, by which course of action they not only won respect but probably maintained a more consistent average than they would otherwise have done.

There was an indignation meeting of the members of the technical staff of one of the automobile publications in Buffalo Monday when they saw their paper and the survivors of the run enjoyed a good laugh at their expense. The paper published a photograph of a wide, well paved boulevard and labeled it "Nelson Hill."

The staff of *MOTOR AGE* was kept busy Friday at Rochester acknowledging congratulations on their enterprise in getting copies containing a full illustrated account of the run up to Wednesday in the hands of the riders, 24 hours before any other automobile paper of the same date had made its appearance.

Hiram Maxim, of the Electric Vehicle Co., took things easily in a Columbia gasoline runabout, and sacrificed speed for comfort. Tuesday evening he arrived at Albany in the most leisurely fashion, his vehicle decorated with wild flowers and grapes, suggesting a raid on some vineyard.

The American Bicycle Co.'s steam truck was seen gaily making it way to the starting point at an early hour. When last seen it was being hauled up a hill near Peekskill. It did not go beyond that place, for to have attempted to drive it over the roads encountered would have been madness.

The Dunlop tire on both Duryea vehicles went through without a puncture. A four-wheeler, which was not entered, arrived in Buffalo in good shape, as did the little three-wheeler, with the exception of

a slightly sprung axle and a bent mud-guard through a fall into a ditch.

At Albany the price of everything was elevated for the occasion. The price of gasoline, drinks and shaves went up, and tips were necessary to get baggage after it arrived at the depot and hotels. Blue Book stations were much sought after, but many of them had no gasoline.

It was an interesting thing to notice that the owners of driving horses all along the road, especially the farmers, had brought their horses from distances to introduce them, as it were, to the automobile. It was a good, sensible thing to do, and proves the farmers are not so slow.

"I asked them if this floor of soft sand a foot deep was laid especially for us," said A. L. Riker, alluding to the surface in the curling rink at Albany. Some of the heavy wagons had hard work to get out. It was, however, the only place in Albany that could be rented.

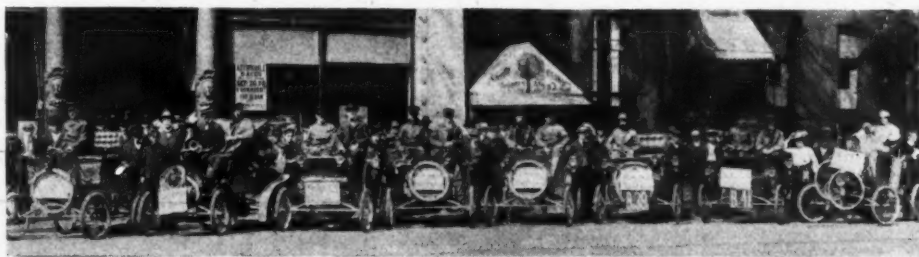
The Philadelphia *Ledger* was much interested in the Pennsylvania motor vehicles, and wired the *MOTOR AGE* representatives to send special dispatches, especially as to what the Autocar was doing, saying: "We expect to see the Autocar do well." And it did.

The proprietor of the hotel at Hudson, the Tuesday noon control, said to a *MOTOR AGE* man as the last wagons were leaving:

"I have been in the hotel business for over twenty years and have never in all my experience fed a more gentlemanly and genial crowd."

One of the noteworthy features of the run was the pleasant treatment and reception by the farmers east of Albany and a distinctly hostile attitude of evidently less intelligent ones west of Albany.

A Winton, with two wheels damaged, re-



A GROUP OF LOCOS. AT THE FINISH.

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turned to Syracuse an hour after the start, and looked as if it would have hard work to catch up. The machine was B 26, a semi-racer.

A Columbia gasoline returned to Syracuse with a damaged tire, but was soon out again and running towards Lyons and Rochester.

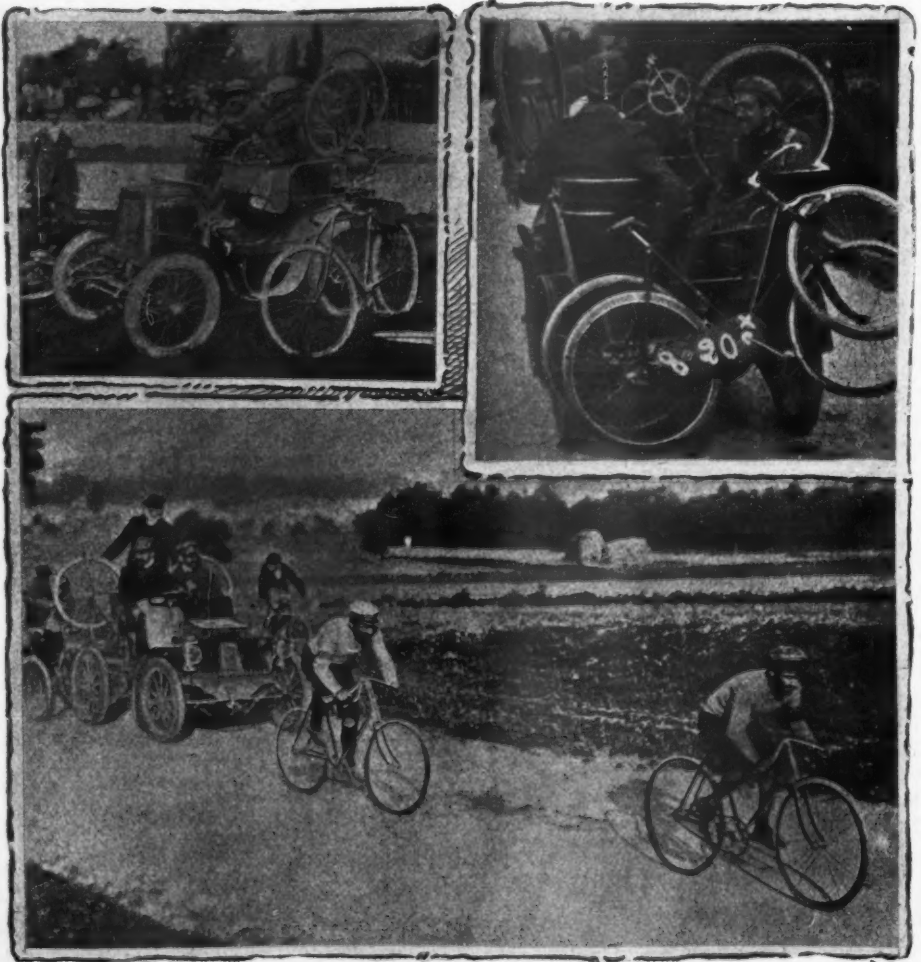
Harry Burhans had an AGE man guess-

ing several times as he rushed through ditches to pass some slow-moving coach which had the road and felt like disputing the lead.

The operators and passengers on the Foster wagons were Park Densmore, Sidney Waldon, Fred Holly and Ray Densmore.

Wednesday morning John Jacob Astor was missing, having returned to New York.

AUTOMOBILES AS PACE-MAKERS



Truly the enthusiasm of the French people is unbounded. In last week's issue there appeared a report of a great road race in which automobiles played a prom-

inent part. The accompanying illustrations show the uses to which the motor cars were put on that occasion. The lower picture shows the grand old man, Rivierre.



FROM CORRESPONDENTS



Remington, Ind., Sept. 11.—To the Editor: I was making the run from Chicago to Watseka, Ill. The roads from Momence to Watseka are in some places very sandy and in others hub-deep in mud. I had gotten through the worst of it, and was nearing Watseka, when I encountered another swamp. The engine struggled bravely through a mile or more of mud, which in nearly every instance was up to the sprocket wheels, when the terrific strain cut the taper pin holding together the rear shaft and the gear.

My carriage is a Mobile, and, as you know, the rear wheels turn on a shaft and a heavy taper pin goes through the side of the gearing and through the shaft, holding them solidly together. Any one familiar with the construction of the Mobile can appreciate what a great strain it would take to cut that taper pin off clean and square. The engine stood the strain nicely. It was a simple matter to fix, but I have to send to Chicago for the pin, and also a peculiarly shaped wrench that is required to turn the shaft loose from the gearing.

The lesson I learned from this little experience is that when one starts on an auto tour, to provide himself with a complete set of repairs likely to be needed as possible, and by all means should have wrenches to fit every part of the machine. If any thing happens to the "return bend" of a Mobile when a man is out on a tour, he would have to send to Chicago for a wrench before he could repair it. Moral—Carry all necessary tools, especially wrenches.—Yours, etc., INDIANA.

Method of Figuring Horsepower

Kansas City, Mo., Sept. 12.—To the Editor:—I have a gasoline motor, the actual horsepower of which I am anxious to ascertain, but not being a mechanic I am unable to do so. As I on many occasions noted

where you have answered the Macedonian cry of others I take the liberty of asking you to inform me through the pages of your valuable paper how I may do so, as I understand it is not a particularly complicated process if you only know how. Yours, etc., D. C. K.

There are several simple and easily applied methods of testing the horse-power motors, those most commonly used being what are known as brake tests. In one of these, what is commonly known as a prony brake, is used. There are, however, several objections to this method, one of the main difficulties usually encountered being the heating of the brake and the difficulty of assuring a steady and regular pressure. A more easily applied method is by using in lieu of the prony brake one or more strands of hemp cord, in a method to be described. In either case the brake may be applied either to the fly-wheel of the engine or to a flat faced pulley, which may be temporarily secured to the motor-shaft. In using the cord-brake one end of it should be secured to a spring balance, which may be attached to the floor, or at any convenient place below the motor-shaft. From here the cord passes over the upper semi-circumference of the wheel to which the test is applied. To the free end of the cord should be attached a hook, to which no weights may be hung. It is advisable that a cord or connection of some sort be made between this hook and the floor so that the weights will be prevented from being thrown over the wheel should the engine be started too quickly, or the speed suddenly increased. The apparatus being thus arranged in such a manner that the direction of rotation of the wheel is from the weighted end of the brake, that is so it tends to lift the weight, the engine should be started and as the normal speed of the engine is reached the weight should be increased to the heaviest

FROM CORRESPONDENTS.

point that the engine is capable of standing without reduction in its speed. Having ascertained the maximum weight within the capacity of the engine, the following data is used as the basis from which the horsepower is figured.

B. Weight indicated on balance.

W. Total weight on the brake, which should include in addition to the testing weight, the weight of the hook and all paraphernalia on that side not in contact with the wheel.

C. Circumference of the wheel in feet.

R. Revolutions of the wheel per minute.

From this data the following formula is used:

$$\frac{C \times R \times (W-B)}{33,000} \text{ B. H. P.}$$

For example, to take a supposititious case, let us assume that the engine runs at 800 revolutions per minute, the weight on the brake 125 pounds, the pulls shown by the spring balance, seven pounds, the circumference of the testing wheel two feet, based on this the calculation becomes, from the above formula:

$$\frac{2 \times 800 \times (125-7)}{33,000} 5.9$$

Thus the engine at a speed of 800 revolutions per minute is shown to have developed 5.9-10 horsepower.

An Automobile Trip on the Ohio Canal

CLEVELAND, O., Sept. 15.—To the Editor.—To the uninitiated a trip in an automobile is suggestive of smoothly paved streets or nicely graded park driveways, but to those who really know the capabilities of the machine the pleasure of a run through the country in a motor carriage is unsurpassed by any other vehicle. Through the kindness of a friend I had the pleasure of such a trip, our carriage being one which is manufactured by the Mobile Company of America, and I would like to give an account of the same for the benefit of the readers of *MOTOR AGE*. Being acquainted with the route south from Cleveland along the banks of the picturesque old Ohio canal, we decided to take that course.

Knowing that the scenery along the canal was the finest in the state we included in our outfit a camera so that we could impress on the sensitive plate the scenes which would gladden our eyes and thus transmit them to thousands who are unable to visit them in person.

It was a lovely day in June when we took our seats on the soft cushions, touched the lever and were off like the wind. Our party consisted of four persons, Mr. and Mrs. B—, in their new Dos a Dos, and Mr. R— and myself in a runabout, which, although built especially for use on paved streets, proved well able to stand the rough usage incidental to a trip through the country.

Our route lay along the valley of the Cuyahoga river and beside the old canal, built during the early history of the state, and was suggestive as showing the present mode of travel in a self-propelling carriage as contrasted with the slow-moving canal boat of seventy-five years ago.

The old canal, which extends from Cleveland to Portsmouth, a distance of 300 miles, and connects the waters of Lake Erie and the Ohio river, was considered a great undertaking for the state, but when it was completed it proved to be of material benefit to the young commonwealth.

Governor DeWitt Clinton, of New York, who had done so much for the canal system of that state, presided at the opening ceremonies and impressed on his hearers the many blessings they would derive from the artificial river.

But the bell of the locomotive rang the deathknell of the canal boat, and travel on the quiet waters has been growing less and less with the passing years; but the route is picturesque, and for an automobile trip is all that could be desired.

The smooth road extends along the canal, making a fine track for the carriage, and the eye is gladdened at every turn by the lovely scenery. The canal from disuse has lost its artificial look and seems more like a quiet-flowing river, but unlike a river the grass grows to the very water's edge. In some places it stretches away for a mile or more in a straight line, and at others it winds around green-clad hills and through shady woods, with ever-changing beauty.

Beside the water is the towpath, worn into the soil by the hoofs of the plodding mules. Three hundred miles of treadmill, extending from the shore of the limpid lake to the banks of the River Beautiful. Being an enthusiastic camera fiend I was much impressed by the opportunities on every side for the study of compositions.

FROM CORRESPONDENTS.

Pictures to imitate the work of our great painters can be found in great profusion.

Here you will see a mass of high trees on the left, the Cuyahoga in the center, with some low trees rolling meadows or distant hills on the right. Take it and you have a Claude Lorraine. Here you will find an humble cottage beside the canal, with a fishing boat moored to the bank; if you get a picturesque figure in the foreground you will have a Corot.

Find a place with a low horizon, some marshland, a solitary tree or an old mill, and you will have a D'Aubigny. Have the above conditions and include a village church spire and some people working in the field and you have a Millet. Gliding along in a motor carriage past such scenery was indeed a pleasant experience.

At South Park we pass one of the old taverns which were so necessary in the palmy days of the canal but are now almost deserted and fast going to decay.

Here the valley stretches out on either side and the hills are terraced from the summit down with groves of green trees. The wheat fields look like a sea of gold, flanked on one side by the dark green of the growing corn and on the other by the light green of the ripening oats, while here and there can be seen solitary maples stretching out their long branches as if to invite the tired farm boy to rest beneath them. The river and canal, though close together, present to the mind two distinct pictures. The river is erratic, both in its

course and actions; it turns here and there like a wayward giant, gnawing at the bank with relentless tooth wherever an effort is made to keep it in proper bounds. Evidences of wanton rage are seen all along its course in the rough stones that have been hurled out on the banks and the up-rooted trees which have been left to bleach in the sun and to be worn away piecemeal by the rushing water. The canal seems to have a purpose in life, and goes along quietly but surely, to accomplish that purpose. Instead of trying to battle down obstacles it evades them and uses its strength on the work it has in hand; it accomplishes a great work, but makes little noise in the world. The water flows so gently that the tender grass grows to the brink, and water lilies, flags and cattails fringe the shore. At Tinkers Creek we pass the ruins of the old Moravian Indian settlement, which is an interesting place and is visited by many who are interested in the early history of the state. Nearby is one of the canal locks and a ruined tavern, a relic of the old regime.

These locks are the most attractive spots on the canal; at each lock there is an overflow or outlet for carrying the surplus water around the lock proper. This forms an island, and they are generally covered with trees and bushes. We have a small waterfall, with miniature rapids below; on either side are bushes overrun with vines, which hang in graceful festoons over the rushing water. Above tower the elms,



WHAT THE CAMERA SAW.

FROM CORRESPONDENTS

oaks or basswoods, casting a grateful shade over all. The locks are composed of huge wooden gates; the boat enters the lock basin, the lower gate is swung shut by large beams made of squared logs; the valve in the upper gate is opened so that the water flows in, filling the basin and raising the boat up to the level of the canal above the lock. The upper gate is then swung open and the boat towed on toward its destination. For boats which are descending the canal the operation is reversed. These old locks are of especial interest, for in his boyhood our lamented president, James A. Garfield, worked on this canal and helped to swing the old lock gates to admit the Evening Star. The Ohio canal is no doubt the only one in the country to be so connected with such a distinguished person.

One feature of this route was the many stone watering troughs we found along the road, and these proved very convenient when the water got low in our carriage tanks. One of our illustrations shows our party taking on water. When we reached Alexander's Mills we found that the smooth road left the valley and went up among the hills. This was an excellent opportunity to try the hill-climbing virtue of the Mobiles, and they clearly demonstrated that they can do the work, for they went up the hills with ease and flew over roads that were none too good at a speed which caused the country people to gaze after us in amazement.

My friend, who was driving the machine, is an accomplished chauffeur, and the way we went up hill and down dale would have frightened a novice at the business. Mr. B——'s Dos a Dos proved to be the ideal carriage for such a journey, and behaved in a way very complimentary to the company who turns them out.

After replenishing our gasoline tank at a country village—which proves that you need not want for motive power even in the country—we started for the return trip home.

Our experience showed that the motor carriage can be used in the country on most any road which is passable for other vehicles, and that the exhilarating effect of a ride in an auto is superior to any other means of travel. The slow-moving canal-boat of 1825 was considered a great boon to travelers of that day; but in the year

of our Lord 1901 we must have the rapid-moving motor carriage, which is one of the seven wonders of the new century.—Yours, etc., H. M. ALBAUGH.

Believes in Larger Wheels

WICHITA, Kan., Sept. 11, 1901.—To the Editor: I have a good steam vehicle, and I find that they are now built on lines that are almost perfect and I could suggest little improvement in the management, mechanism and handling of the machine. One thing I notice, however, and that is the wheels on nearly all automobiles are only 28 inches and I feel confident that if the wheels were made larger they would materially assist in running at high rates of speed over rough roads, for small wheels produce much more jar than the large ones.—Yours, etc., A. S. Parks.

Points of Interest

14.—A gentleman who has had a lot of experience with motor cycles calls attention to the folly of having unnecessary lengths of wiring. He used one machine for a long time without satisfaction, being unable to get anything like its rated power out of it. Later he removed the battery from its original position and remounted it, thereby saving a lot of wire. The result was beneficial from the start. He concludes that there was an escape of current through short circuiting, and some, even, through induction, where the wires ran through the steel tubes of the frame.

15.—I have known of two cases of failure to oil exhaust valve stems. The results were that the machines were hauled home. Amateurs will take warning.

16.—In cases of accident to your motor bicycle never fail to turn the grip and stop the spark. Otherwise, when the fall comes the motor will race, perhaps with serious results.

17.—Never undertake a long journey until you know your motor bicycle thoroughly. No two machines will operate alike unless adjusted exactly. Motors will sometimes become so hot that they will stop. Wait five minutes, pour a little oil into the relief cock and the machine should start.

18.—Operators of belt-driven machines should loosen their belts at night and thereby relieving them of strain and lengthening their lives.

DIMENSIONS OF GASOLINE MOTOR PARTS

PART TWO.

It is often found necessary, in designing a gasoline motor, to form some idea of the speed of the same in revolutions per minute. This depends principally upon two factors, the horsepower developed by the motor and the weight of the rim of the fly wheel and the diameter of the same. It is found from authoritative formula upon the subject to be directly proportional to the diameter of the rim of the fly wheel, and to the square root of the ratio of the weight of the rim divided into the horsepower of the motor. In the following formula N equals the speed in revolutions per minute, D is the mean diameter of the rim of the fly wheel in inches, H P the horsepower of the motor and W the weight of the rim of the fly wheel:
$$N = \frac{33,280}{D} \sqrt{\frac{H.P.}{W}}$$

By means of this formula the theoretical velocity of the fly wheel may be calculated. This formula does not, of course, take into account friction and air resistance; there-

fore 25 to 30 per cent should be deducted from the speed obtained to give a practical working speed limit.

Before going further into this subject it may be well to apply a definition of the term "mean diameter." It is an imaginary circle upon the rim of the wheel, dividing the rim into two equal parts the respective weights of which are equal also, or in other words it is a line of the center of gravity of the normal cross section of the rim. Figure 1 shows this mean diameter plainly in side view and section of the fly wheel. To ascertain the mean diameter of the rim of a fly wheel of corresponding shape in cross section to that shown in Fig. 1, add together the squares of the inner and outer diameters of the rim, divide the result by two, and the square root of the number obtained will be the mean diameter of the rim.

Example: Inner diameter of rim is 12

To obtain the theoretical speed limit in revolutions per minute of a fly wheel with given weight of rim and mean diameter, when the horse power is known, divide the weight of rim of fly wheel by the horse power. Then multiply the number in column A opposite to the nearest required mean diameter by the coefficient from column B, corresponding nearest to the ratio of weight to horsepower obtained. The result will be the theoretical speed limit of the rim of the fly wheel.

| Mean Diameter. | A | Weight. | B | Weight. | B |
|----------------|-------|-------------|------|------------|------|
| | | Horsepower. | | Horepower. | |
| 5 | 8.640 | 5 | .447 | 27½ | .191 |
| 6 | 7.200 | 6 | .408 | 30 | .183 |
| 7 | 6.170 | 7 | .378 | 32½ | .175 |
| 8 | 5.400 | 8 | .353 | 35 | .169 |
| 9 | 4.800 | 9 | .331 | 40 | .158 |
| 10 | 4.320 | 10 | .316 | 45 | .149 |
| 11 | 3.927 | 11 | .301 | 50 | .142 |
| 12 | 3.600 | 12 | .289 | 55 | .135 |
| 15 | 2.880 | 13 | .277 | 60 | .129 |
| 18 | 2.400 | 14 | .268 | 65 | .124 |
| 21 | 2.057 | 15 | .258 | 70 | .119 |
| 24 | 1.800 | 17½ | .239 | 75 | .116 |
| 27 | 1.600 | 20 | .224 | 80 | .112 |
| 30 | 1.440 | 22½ | .210 | 85 | .108 |
| 36 | 1.200 | 25 | .200 | 90 | .105 |

TABLE NO. 6.

TABLES OF DIMENSIONS.

inches and outer diameter of same 16 inches; then square of 12 is 144 and square of 16 is 256; then 144 plus 256 equals 400. Then 400 divided by 2 equals 200, and the square root of 200 is 14.14, which is the mean diameter required. Or to put it another way:

$$\text{Mean diam.} = \sqrt{\frac{\text{Sq. of outside} + \text{Sq. of inner diam.}}{2}}$$

Unless a very close calculation is required, the mean diameter of the rim of the fly wheel may be roughly obtained by adding together the inner and outer diam-

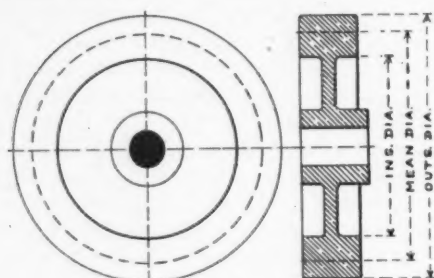


Fig. 1.

eters and dividing the result by two.

Example: Inner diameter of rim, as before, 12 inches, and outer diameter of same 16 inches; then 12 plus 16 equals 28, and 28

divided by two equals 14, the approximate mean diameter of the rim of the fly wheel. Table No. 6 gives a range of mean diameters from 5 to 36 inches and ratios of weight to horsepower from 5 to 90. An explanation of the use of this table for the benefit of the user accompanies the table. An example of its use will, however, be given.

Example: A fly wheel with rim weighing 44 pounds is 14 inches outside and 10 inches inside diameter; the motor is expected to develop 4 horsepower. What is the theoretical speed of the wheel in revolutions per minute? Then 14 plus 10 equals 24, and 24 divided by 2 equals 12, the approximate mean diameter of the rim. Forty-four divided by 4 equal 11, the ratio of the weight of the rim to the horsepower of the motor.

The number from table No. 6 corresponding to a mean diameter of 12 inches is 3,600. The coefficient from column B of table, corresponding to the ratio, which is 11, is .301. Multiplying 3,600 by .301 we get 1,083.6 as the theoretical speed of the wheel in revolutions per minute. Deducting 30 per cent, we have 758.5 as the practical limit of speed of the wheel, which agrees

NOMINAL HORSE POWER OF MOTORS.

(Stroke equal to Bore.)

| Bore and Stroke | Gauge Press. | Revs. Per Minute | Horse Power | Revs. Per Minute | Horse Power | Revs. Per Minute | Horse Power | Revs. Per Minute | Horse Power |
|-----------------|--------------|------------------|-------------|------------------|-------------|------------------|-------------|------------------|-------------|
| 2½ x 2¼ | 90 | 1800 | 2¼ | 1500 | 17½ | 1200 | 15½ | | |
| | 75 | | 2 | | 13¼ | | 11½ | | |
| 3 x 3 | 90 | 1500 | 2¾ | 1200 | 2¼ | 900 | 19¼ | | |
| | 75 | | 2½ | | 17½ | | 15½ | | |
| 3½ x 3½ | 90 | | 3¾ | | 3¼ | | 2¾ | | |
| | 75 | | 3½ | | 27½ | | 2½ | | |
| 4 x 4 | 75 | 1200 | 4 | 900 | 3¾ | 750 | 3¼ | 600 | 2¾ |
| | 60 | | 3¾ | | 3 | | 2¾ | | 2½ |
| 4½ x 4½ | 75 | | 5¾ | | 4½ | | 4¼ | | 2¾ |
| | 60 | | 4¾ | | 4½ | | 3¾ | | 3¾ |
| 5 x 5 | 75 | 900 | 6 | 750 | 5½ | 600 | 47½ | 450 | 4¼ |
| | 60 | | 5¾ | | 47½ | | 43½ | | 3¾ |
| 5½ x 5½ | 60 | | 6¾ | | 6¼ | | 5½ | | 4¾ |
| | 45 | | 57½ | | 57½ | | 43¼ | | 4½ |
| 6 x 6 | 60 | 750 | 7¾ | 600 | 67½ | 450 | 57½ | 300 | 47½ |
| | 45 | | 6¾ | | 57½ | | 5½ | | 4½ |

TABLE NO. 7.

TABLES OF DIMENSIONS.

pretty closely with actual results under the above conditions. Calculations made by the use of this table go to show that a small wheel, with a heavy rim, is capable of being driven at a higher speed than a larger wheel with even a lighter rim with the same horsepower, proving, beyond a doubt, that the European practice of using small heavy fly wheels, enclosed in the crank chamber, is more economical in results than the American practice of using larger fly wheels at slower speed. Table No. 7 gives what may be termed the nominal horsepower of motors, with stroke equal to bore, from $2\frac{1}{2} \times 2\frac{1}{2}$ to 6×6 , inclusive, with varying compressions and speeds. Table No. 8 is similar to table No. 7, but gives motors of unequal bore and stroke. The horsepower given in these tables is that the motor should give up under the best possible conditions. Contracted inlet pipes or exhaust openings, too small valves, leaky rings, poor igniting devices and a host of other things go to detract from the results given, but there are a number of motors corresponding to some of those given in the table that give up the horsepower stated.

Answers to the question of the exact amount of compression carried by certain types of motors are usually ambiguous. The agent of a manufacturer told the writer that the motors made by his firm carried 105 pounds per square inch. Upon being asked how many atmospheres it represented

he said about 4. He had in all probability obtained his information from some technical person connected with his concern, as the figures given approached closely the theoretical values for the Isothermal pressure, or pressure due to the combined effects of the compression and the heat generated in the cylinder. If there were no heat loss due to radiation and the cooling effect of water in jacketed motors, the figures given to the writer would be pretty nearly correct. But in actual practice the compression in pounds per square inch never reaches the theoretical range. Table No. 9 gives the values for both the Adiabatic and Isothermal pressures, also the gauge pressure of the former, and the theoretical temperature limit of the latter.

In the first part of table No. 9 two direct pressures are given, viz., the internal or actual pressure in pounds per square inch within the cylinder and the gauge pressure, which is the internal pressure less atmospheric pressure, also in pounds per square inch. To obtain the gauge pressure for the Adiabatic compression multiply the number of atmospheres of compression by 14.7, and then subtract 14.7 from the result, or deduct one from the number of atmospheres of compression and multiply the remainder by 14.7. The gauge pressure in pounds per square inch will be the result.

The mean pressure of the Adiabatic

NOMINAL HORSE POWER OF MOTORS.

(Unequal Bore and Stroke.)

| Bore and Stroke | Gauge Press. | Revs. Per Minute | Horse Power | Revs. Per Minute | Horse Power | Revs. Per Minute | Horse Power | Revs. Per Minute | Horse Power |
|-------------------------|--------------|------------------|----------------|------------------|----------------|------------------|----------------|------------------|----------------|
| 3 x 4 | 90 | 1200 | $2\frac{1}{4}$ | 900 | $2\frac{1}{4}$ | 750 | $1\frac{7}{8}$ | 600 | $1\frac{3}{4}$ |
| | 75 | | $2\frac{1}{4}$ | | $1\frac{7}{8}$ | | $1\frac{3}{4}$ | | $1\frac{1}{4}$ |
| $3\frac{1}{2} \times 5$ | 90 | | $3\frac{5}{8}$ | | $3\frac{1}{4}$ | | $2\frac{7}{8}$ | | $2\frac{1}{4}$ |
| | 75 | | $3\frac{3}{8}$ | | $2\frac{7}{8}$ | | $2\frac{5}{8}$ | | $2\frac{1}{8}$ |
| 4 x 6 | 75 | 900 | $4\frac{1}{4}$ | 750 | $3\frac{7}{8}$ | 600 | $3\frac{3}{8}$ | 450 | 3 |
| | 60 | | $3\frac{3}{4}$ | | $3\frac{3}{8}$ | | 3 | | $2\frac{5}{8}$ |
| $4\frac{1}{2} \times 7$ | 75 | | $5\frac{3}{4}$ | | $5\frac{1}{4}$ | | $4\frac{3}{4}$ | | $4\frac{1}{4}$ |
| | 60 | | $5\frac{1}{8}$ | | $4\frac{3}{4}$ | | $4\frac{1}{8}$ | | $3\frac{5}{8}$ |
| 5 x 8 | 60 | 750 | $6\frac{1}{8}$ | 600 | $5\frac{5}{8}$ | 450 | $4\frac{3}{4}$ | 300 | $4\frac{3}{8}$ |
| | 45 | | $5\frac{3}{8}$ | | $4\frac{3}{4}$ | | $4\frac{1}{4}$ | | $3\frac{3}{4}$ |
| 6 x 8 | 60 | | $8\frac{7}{8}$ | | 8 | | $6\frac{7}{8}$ | | $5\frac{5}{8}$ |
| | 45 | | $7\frac{5}{8}$ | | $6\frac{7}{8}$ | | $5\frac{3}{8}$ | | $4\frac{7}{8}$ |

TABLE NO. 8.

TABLES OF DIMENSIONS.

pressure is also given, and by using a modification of the formula used for calculating the horsepower of steam engines the horsepower required to compress the charge in the cylinder at any given speed may be readily figured. The pressures given in the first part of table No. 9, for the Adiabatic pressure do not take into account the heat

generated in the cylinder by the action of compressing the charge, and are more generally used than the Isothermal ones, as the actual pressure resulting from the compression of the charge will rarely exceed 10 to 15 pounds per square more than the gauge pressure given in the first part of this table.

CYLINDER, GAUGE AND MEAN PRESSURE OF COMPRESSION.

(Adiabatic)

| Compression in atmospheres in the cylinder..... | | 2.02 | 3.04 | 4.06 | 5.08 | 6.10 | 7.12 |
|---|--|-------|-------|-------|-------|-------|-------|
| In lbs. per sq. in. | Internal pressure in the cylinder..... | 29.7 | 44.7 | 59.7 | 74.7 | 89.7 | 104.7 |
| | Gauge pressure | 15 | 30 | 45 | 60 | 75 | 90 |
| | Mean pressure of the compression..... | 10.33 | 16.34 | 20.57 | 23.78 | 26.55 | 28.89 |
| | | | | | | | |

ABSOLUTE PRESSURE AND TEMPERATURE OF COMPRESSION.

(Isothermal)

| Compression in atmospheres in the cylinder..... | | 2.02 | 3.04 | 4.06 | 5.08 | 6.10 | 7.12 |
|---|--|-------|-------|-------|-------|-------|-------|
| Absolute pressure in pounds per square inch | | 39.25 | 69.68 | 104.5 | 140.9 | 184.9 | 229.6 |
| Temperature in degrees Fahrenheit..... | | 178° | 252° | 321° | 375° | 420° | 459° |

TABLE NO. 9.



LATE EFFORTS OF DESIGNERS

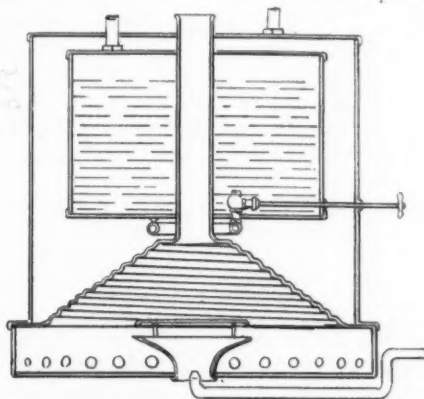
Complaints have been made by users of steam vehicles regarding the lack of circulation of water in the boiler, and the consequent delay in making steam. A simple and apparently effective device for overcoming this has been developed by Samuel D. Mott, of Passaic, N. J. It consists of a series of circular plates, perforated to admit the flue tubes, and cut radially from the center to the edge. They are then bent so that, when placed one above the other in the boiler, they make a spiral with the adjoining edges of the plates, riveted or otherwise fastened together. The plates, thus arranged, are surrounded by a cylindrical shell somewhat smaller in diameter than the boiler shell. The water being heated by contact with the tubes, will flow around the spiral in an upward direction, while the cooler water will flow down the outside of the shell surrounding the circulator, materially aiding in heating the water to the desired temperature.

Good Principle for Flash Boilers

Flash boilers are generally composed of a number of intensely heated tubes into which the water is introduced in small quantities. Willard H. Coun, of Toronto, Canada, is the inventor of what is a flash boiler, though it differs greatly from the style just referred to. In this device the shell of the boiler is preferably of cylindrical form. Connected with the lower portion of the shell is an inclined heating plate, preferably formed as the frustum of a cone. The heating plate is corrugated horizontally, the corrugations preferably forming a helix, running from the top of the heating plate toward the bottom. From the top of this heating plate is a flue leading through the top of the boiler shell. Surrounding this flue is the water tank, which is also cylindrical in form, but of considerable smaller diameter than the boiler shell, and the height of which is such that there is a clear space left at both top and bottom. Below the water tank, and over the upper portion of the heating plate, is a perforated ring, connected with the interior of the water tank at or near its bot-

tom. Suitably located in connection with this ring is a valve, which may be adjusted either automatically or manually, to supply the desired quantity of water to the perforated ring.

The burner may be of any readily adaptable type. The operation of the device is very simple. The burner being lighted, the corrugated plate becomes intensely heated, and at the same time small quantities of water are allowed to escape from the perforated ring and flow down over the plate, following the helical corrugation therein. By the time the water has reached the bottom it is completely vaporized, filling the steam space of the shell; indeed, as will be seen, when the metal has become heated, the water can never reach the bottom un-



less turned on too freely. The water tank being located in the steam space and about the flue through which the products of combustion escape, the water is heated before reaching the heating plate.

A Tire-Attaching Device

One of the greatest difficulties attending a solid tire is its tendency to creep. One of the latest devices for overcoming this trouble is the invention of John Glenn, of St. Louis. This tire may be of any desired shape, so far as the tread is concerned, and is provided with laterally projecting flanges. On the periphery of the rim are placed at regular intervals transverse lugs of dove-tail section. The surface of the tire

LATE EFFORTS OF DESIGNERS.

adjacent to the rim is provided with grooves suitably formed and placed to receive the lugs. In attaching the tire, it is slid on sidewise, with the lugs seated in the corresponding grooves. Metallic flanges, similar to those in general use, are provided, which surround the lateral projections of the tire, and are bolted to the rim by transverse bolts extending from flange to flange through the rim. To still further provide against creeping, the flange on the tire is cut away for a short distance between the grooves for the lugs on the rim, and the metal flanges attached to the rim are provided with inwardly-extending projections, seating in the spaces cut in the tire.

Merit in Simplicity

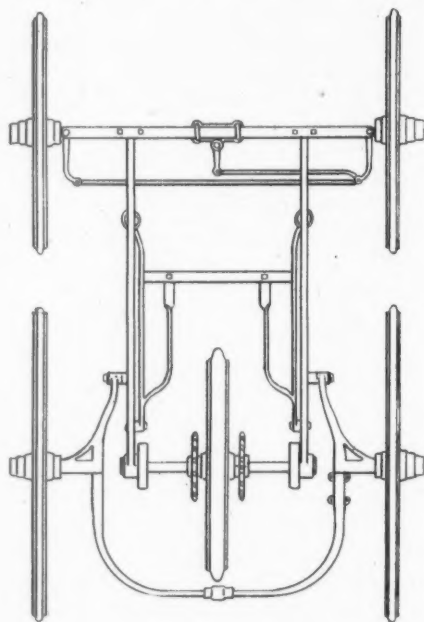
It sometimes happens that devices, so simple that the average mechanic would use them without thought of protecting his right to them by patents, or of others having done so, are taken in hand by some one, perhaps more alive to his own interests, and fully covered by letters patent. Thus it is with the subject matter of two patents recently issued to A. O. Very, of Springfield, Mass., a gentleman long connected with the cycle business and now interested in the manufacture of the Warwick automobile.

One of these is a muffler, which is merely a series of nested tubes with several rows of holes drilled down one side of each. The tubes are held in place by caps at each end, through one of which the inner tube projects forming the inlet of the muffler. In setting the tubes in the caps they are so placed that the rows of holes in each are in line with the solid wall of the surrounding one, thus compelling the gas after it has escaped from one tube to travel around it before it can pass through the holes in the next. This is certainly about the simplest possible form of a muffler, and one of the first that would occur to almost any one desirous of building such an article. Equally simple is a starting device for gasoline engines. It consists merely of a sprocket wheel, fitted with a clutch similar to those used in coaster or free-wheel hubs for bicycles, attached to the motor shaft and operated by a chain and lever, as shown in the accompanying illustration.

A Five-Wheel Carriage

There have been various adaptations of the separate driving-wheel idea. One of

them is the production of B. C. Hicks, of Chicago, who became famous as the inventor of the celebrated Hicks stock car. It differs from the general run of these devices principally in the design of the running gear. In a vehicle constructed in accordance with Mr. Hicks' ideas, a frame work is provided, in which is mounted, at the rear end, an axle carrying the driving or



traction wheel. This frame is secured at its front portion to a front axle of any desired pattern, provided with the usual guiding wheels. The rear wheels are attached to a frame work, which is substantially U shaped in plan. The free ends of this frame work are pivoted to the main frame at a point forward of the driving axle. The springs supporting the carriage body are attached to this rear frame and the front axle, and it is intended that the motor and accessories shall be attached to the frame work of the vehicle between the driving wheel and the front axle.

A Friction Clutch for Bicycle Makers

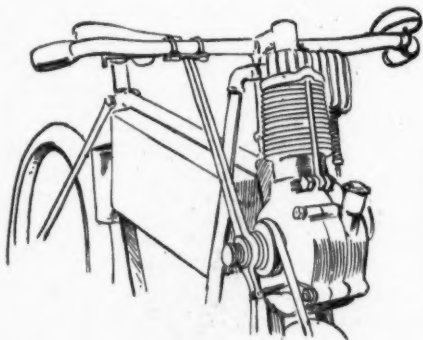
An English engineer, James Simkiss, has constructed a fast and loose clutch for use on motor cycle engines. For his own use the attachment is fitted to a Werner bicycle, but it may be readily adapted to any other. No alteration of the motor is required,

LATE EFFORTS OF DESIGNERS.

as the clutch is secured to the end of the motor shaft by a circular nut, screwing to the clutch. The fulcrum bracket for the operating lever is fixed to one of the bolts of the crank case and the bracket for holding the clutch in and out of gear is fixed to the handle bar by two clip bolts. The entire outfit is so small and neat in appearance that a casual glance at the machine would not reveal the attachment.

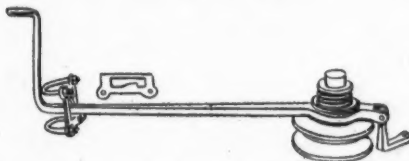
The clutch consists of two friction disks, the back, or inner, of which follows the bevel of the pulley groove in section and has on it a long-sleeve, and on the sleeve revolves the loose V pulley on a row of balls running directly under the V groove. The outside friction disk takes the shape of the outside of the pulley. It has two key-ways and is driven by corresponding keys fixed in the sleeve of the back disk. The outside disk slides on the sleeve and keys and is thrown out of gear when the lever is pulled toward the grip on the handle bar by the thumb. Each of the friction disks is covered by a leather facing. The pulley is thus pinched between the two disks, which are held together by a spring of suitable strength located on the end of the sleeve of the inner disk. Beyond the spring is a prolongation of the sleeve, to which a starting handle may be applied so that the motor may be started independently of the machine if desired.

There is no end thrust when the engine is at work, the thrust being only momentary when the clutch is pulled out of gear.



The inventor has thoroughly tested the device on his own bicycle and states that he has found it perfectly successful and is particularly useful in city riding to cut out the motor entirely and pedal the ma-

chine when conditions make this the most satisfactory mode of progression. The weight of the entire device is only 2½ pounds. The inventor says he has always found the grip ample to take the maximum drive of the engine. That this should be so in such a small compass is undoubtedly



due to the double grip of the friction disks on each side of the pulley, and this, as has been shown, not only tends to the attainment of a good working grip, but also to the absence of end thrust.

A New Carriage Design

A great many people are of the opinion that the general run of motor carriages are constructed with the body too high from the ground. It is no doubt the case that some of them now in general use are greatly inclined to be top heavy, as evidenced by the fact that there has been reported a considerable number of accidents, particularly in the way of tip-overs when rounding corners. In order to reduce the height of the carriage body without altering the size of the wheels, Joseph C. Wood, of Worcester, Mass., has designed a vehicle in which the usual running-gear is dispensed with, and the carriage body is made of sufficient strength so that the front and rear axles are separately attached to it, and the usual reaches are dispensed with. Under each end of the body are located the springs, which rest directly on the axles. A brace is provided, both ends of which are attached to the rear axle, and forms in connection with the rear axle a framework rectangular in plan, the forward end being attached to the carriage body. Extending backwardly from the front axle is a brace-frame triangular in plan, with the apex of the triangle pivotally attached to a supporting member attached to the carriage body.

By this device the vertical planes of the axles are maintained parallel to each other, but owing to the pivotal connection of the brace of the front axle the wheels are enabled to adapt themselves to the roughness

LATE EFFORTS OF DESIGNERS.

of the road. Another point worthy of consideration in Mr. Wood's vehicle is the system of operating the brake. By means of a connection arranged between the brake-lever and the throttle-valve of the engine, the throwing on of the brake automatically cuts off the engine, thereby not only aiding in stopping the vehicle but relieving the power transmission of the strain incident to allowing the engine to work against the brake.

To Reclaim Old Rubber

It is not so very long ago that but little effort was made to reclaim the old rubber from the vast number of worn out articles in which it was the basic material. However, since the introduction of rubber vehicle tires and the many other new demands on the rubber supply, reclaimed rubber has become a decidedly important factor in the market.

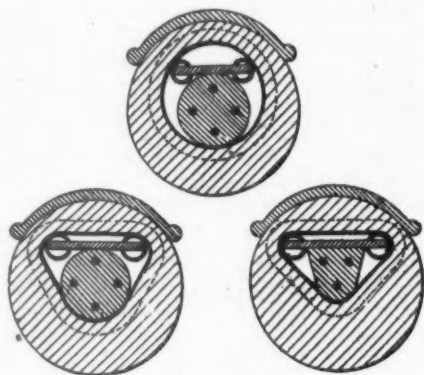
Any one who has ever seen the big piles of scrap rubber ready to be pulverized and reclaimed at the Akron reclaiming plants will not be surprised to learn that estimates recently made place the total quantity of rubber reclaimed the past year at 60,000,000 pounds. This places the value of old rubber which is gathered up high in the millions.

The approximate purchases of a Chicago concern which deals in rubber scrap leads its management to estimate the quantity of rubber shoes gathered in this country at approximately 25,000 tons. In addition to this, there are gathered about 5,000 tons of hose, some 2,500 tons of bicycle and vehicle tires, and some 5,000 tons of miscellaneous rubber scrap, or a total of 37,500 tons. This does not take into consideration the foreign rubber boots and shoes that are landed in the east. The yield of reclaimed rubber will average about 80 per cent.

The Latest Elastic Tire

W. F. Williams, of London, England, is the inventor of an elastic tire somewhat distinctive in its design. The device consists in the combination with a hollow tire of an internal solid elastic core or cushion of such different cross-sectional shape to that of the hollow or space within which it is contained, that while affording a direct internal support to the tread portion of the tire, vacant spaces will be left at

the sides of the core so that it will have perfect freedom for lateral expansion when under compression of the load, without liability of extension in a longitudinal direction. This internal supporting cushion may be applied within hollow tires of various sectional forms and be itself of various forms the essential feature in all cases



being that it is of such form as not to fill the space within which it is contained. It is, however, preferred that the tire be of circular form externally and be clasped to the wheel-rim by a metal band provided upon its edges with tubular shields to prevent cutting the tire through pressure against these edges. The elastic core is contained within the tire in the space between the tread of the tire and the retaining band. Three forms of this tire are shown in the accompanying illustration, and it will be noted that in all cases in order to prevent longitudinal extension of the core the latter is provided with cords of wires imbedded in it. These cords have at intervals knots so as to form a multiplicity of points of resistance to prevent the cords becoming loosened from the rubber and allowing of a longitudinal movement of the latter.

A Charcoal Burner

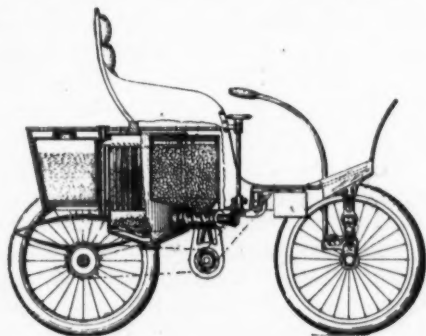
One of the most radical departures from the generally accepted ideas of automobile construction is the charcoal burning carriage recently patented by H. K. Hess, of Philadelphia. Instead of the usual burner for gasoline or oil Mr. Hess employs a device for the burning of charcoal.

Two reservoirs for the fuel are provid-

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ed, one at each side of the vehicle body, which work independent of each other. The upper ends of the reservoirs are provided with removable tops lined with a non-heat-conducting material and at the bottom is an opening communicating with a cylindrical extension, which in turn communicates at one end with the combustion chamber. Within the cylindrical extension is a screw, the inwardly extending end of which is in close proximity to the discharge end of the cylindrical conduit while the outer end is connected with suitable means for effecting its revolution, either manually or by mechanical means through connection with the engine.

The boiler to be used with this burner may be of any ordinary type except that the passage for the escape of the products



of combustion must be considerably larger than when using liquid fuels. The burner proper is provided with a grate which preferably consists of a hollow conical frame, having its apex extending downwardly and forming a suitable hopper for receiving the fuel and concentrating the same toward the center of the grate. This hollow grate is connected to the air-feeding device by a tubular conduit, the upper wall of the grate being provided with a series of perforations, which provide for the discharge of the air through the fuel, thereby facilitating the combustion thereof and tending to produce the required intensity of heat. In order to provide for the proper quantity of air a centrifugal pump or fan is attached to the body of the vehicle.

For operating this fan the inventor advises the use of an electric motor, and some auxiliary motor is of course necessary in order that the required air blast may be obtained while the carriage engine is not

in action, both in the case of starting the fire and when the vehicle is standing still, but when the engine is running the auxiliary motor might be advantageously cut out and the fan operated by the engine.

In operating this device the reservoirs are filled with charcoal or similar fuel, which gravitates through the opening into the cylindrical conduit. The screw is then rotated by the means provided, forcing the fuel into the combustion chamber. The fuel within the combustion chamber is then ignited by removing a cap at the apex of the lower wall of the grate, which also acts as the ash-pan.

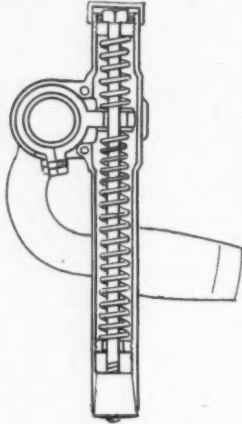
The blower is then operated by the auxiliary motor, producing an air blast within the combustion chamber through the fuel, whereby the combustion of the fuel is facilitated and a high degree of heat is obtained within a very short space of time. While there is a considerable number of vehicles in the European market using solid fuels they are generally of a heavier class of vehicles, such as freight trucks and public conveyances, and it is extremely doubtful if a burner of this device will ever become a popular attachment to a light vehicle for ordinary use.

A Spring Handle-Bar

Some time has elapsed since the ambitious inventor devoted his attention to a flexible or spring handle-bar, but it appears in some form or other, at irregular intervals. The first device of this sort was the so-called velvet bar, attached by Sterling Elliott to his long-since-lamented Hickory bicycle. The latest is the production of John Hullt, who may be readily excused therefor, as his residence is given as Hood River, Ore., where the roads are probably not regularly macadamized. In this device the handle-bar is provided with an annular collar, having a projection extending into the handle-bar stem, as shown in the illustration. Inside the stem are two spiral springs, the outer extremities of which rest against seats provided therefor in the stem. The inner ends bear against the above-mentioned projection on the collar attached to the handle-bars, and tend to hold it at a point of rest where the pressure of the springs is equalized. The collar is adjustable to the handle-bar, so that any desired position of the bars may be obtained. In

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order to rigidly attach the handle-bar to the stem, a clamp is provided, one end of which surrounds the collar on the handle-bar, while the other end is clamped to the stem by transverse bolts, properly arranged to hold it in position. When desired, this bar may be readily made in the internal ex-



pander type by passing the screw for operating the wedge down through the springs and providing proper holes for its reception in the spring seats and the projection of the collar on the handle-bar.

Transfer of the Springfield Hanger

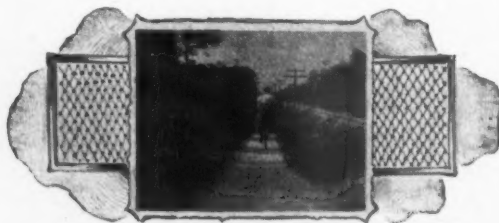
A deal has just been concluded between the Springfield Drop Forging Co., of Springfield, Mass., and the Straight Manufacturing Co., of Jamestown, N. Y., whereby the latter company purchased the entire crank hanger business of the Springfield Drop Forging Co., including good will, trade name, stock manufactured and in process, and the special machinery and tools for the manufacture of crank hangers. The

Straight Manufacturing Co. will hereafter make the Springfield one-piece and cotter pin hangers at Jamestown, N. Y., and the Crosby company will act as their selling agents for these goods. The Springfield Drop Forging Co. will manufacture the forged parts for the hangers, and the Crosby company will supply, as heretofore, the crank boxes and ball cups. The Straight Mfg. Co.'s facilities for turning out these goods are not equaled by any concern in the country on account of their exceptionally fine water power and because of their long experience in the manufacture of crank hanger sets. Their location being midway between the east and west also gives them an added advantage.

The Springfield Drop Forging Co. will continue to manufacture drop forgings, both rough and machined, their well-known line of wrenches, and the high-grade Snow chains. The Crosby company will continue as heretofore the selling agents for these goods.

A New French Tire

Ernest Germain, a mechanic of Paris, France, has invented a pneumatic tire wherein the air instead of being confined in a tube, as is ordinarily the case, is kept in a number of rubber cells which are preferably of ovoid form and thickened in that portion toward the tread. In the construction of this tire these rubber cells are to be inflated to the desired pressure before being placed in the tire. The casting of the tire is of spongy rubber in the inner portion surrounding the air-inflated balls and is enveloped in one or more layers of rubber-coated canvas with an outer sheathing of rubber thickened at the tread. Various devices of this nature have been tried from time to time, never with a great degree of success.



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The wail of the motorist against fool legislation is continually heard, and in many cases not without cause. As misery loves company we present for their consideration the experience of a foreigner who, on a recent dark night, while running his vehicle through a suburb of Munich, was arrested because he overtook the carriage of the Bavarian prince regent. It is against the law of that enlightened land to overtake a carriage of the royal house, and no matter how dark it may be or what the conditions the humble commoner is supposed to see the cockades on the hats of coachmen and footmen of the royal equipage. In this particular case the offending chauffeur was given the alternative of paying \$25 or retiring from society for sixteen days.

A Severe Brake Test

In the recent Glasgow autocar trials the competing vehicles were subjected to a brake test that tried the nerves of the operators as well as the braking appliances of the carriages. The vehicles were taken singly up a steep grade and stopped where the grade was about one in seven. The engines were then disconnected and the brakes entirely released and the carriages allowed to run backward down the grade for about thirty feet, when they were stopped at signal and note taken of the distance covered before coming to a stand.

As there was a nice stone wall to run into at the bottom of the hill in case any of the carriages should get away, and it was a test, the severity of which most of the operators had never contemplated or tried, many of them were palpably nervous about letting their machines run free, and several who kept their clutches in or brakes slightly set were sent back and put through the trial afresh.

In all, forty vehicles were put through the tests, many of them stopping within two or three feet and but few requiring more than a couple of lengths. But one failure was recorded—a five horse-power Serpollet. A wide range of types was included, one

of the heaviest being a freight van, with a ton of iron on board, which stopped in three feet, skidding the wheels nearly the entire distance.

It is a well known fact that while nearly every vehicle is fitted with an effective brake in so far as pertains to stopping the machine from running in a forward direction, many are dangerously weak in the matter of braking in a backward direction, and it is only quite lately that any amount of attention has been given to the latter condition, and accidents due to the motor not being able to propel the vehicle up an excessive grade and the brake being ineffective in preventing a dangerous retrograde movement, are not common, but still they occur, and generally with more or less serious results.

So far as known no test of the above nature has ever been attempted in this country, but it would certainly be an interesting event at any competitive assembly.

One Thousand Mile Auto Trip

Walter A. Thomas and George Doerr, of Minneapolis, Minn., have just returned from an automobile trip through the northwest, having covered a distance of about 1,000 miles. The trip proved a most pleasant one and devoid of any notable accidents. In many of the towns visited the inhabitants had never seen an auto, and the two chauffeurs were the target for a running fire of fool questions, and in reply thereto enthusiastically spread the doctrine of the rapid decadence of the horse.

An Enterprising Auto Club

The Touring Club of France while primarily an organization for the promotion of automobilism does not by any means confine its efforts to that direction. Its functions are much more vast, and every tourist on the continent is indebted to this gigantic organization, often without knowing it, for the amelioration of the conditions of traveling. Its membership has increased to more than 70,000. Its organ, the *Revue de Touring Club de France*, is one of the most

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widely read of French journals. Its headquarters are at Paris.

This club publishes each year an annual giving all places of interest on the continent, conditions and maps of all roads, distances, hotels, laws and regulations regarding tourists, depots of petroleum, etc., and everything of advantage to the traveler. An agreement has been reached by the clubs of France, Belgium, Italy, Switzerland and Luxemborg for the exchange of privileges and courtesies.

A Cop's Idea of Speed

An idea of the average policeman's estimate of speed may be derived from the statement of a highly enlightened member of the mounted police of Morristown, N. J. This distinguished member of "the finest" arrested Dr. Peisek, of New York, and in giving his evidence against the gentleman stated that he saw the machine coming and thought it was going about 60 miles an hour, and before he had time to act the machine had flashed by. He then gave chase and overhauled it and placed the occupants under arrest. From the fact that the valiant cop could give the automobilist, at a 60-mile-an-hour clip, a generous handicap and then overhaul him leaves one to wonder whether his horse was a record-breaker or his ideas of speed somewhat hazy. The average citizen's estimate of speed is often amusing. Not long ago a gentleman stated that a motor cyclist had passed him in a fairly crowded city street, and that he would swear with his hand on the Bible that the cyclist was going at least 40 miles an hour, though the facts were that the capacity of that particular machine was never better than about 30 miles per hour under most favorable circumstances, and at that particular time it was certainly not going over 15.

War on French Scorchers

The French chauffeurs have for some time been addicted to the scorching habit and of late the reports of serious and often fatal accidents brought about by hair-brained motorists have increased with an alarming rapidity and it is affirmed by many that the day of road racing in France is past. The trouble has been caused not so much by competitors in prearranged races as by the criminal carelessness of irresponsible persons who have gone tearing along the

roads impelled only by a wild desire to astonish the natives.

The inevitable result of this has been the arousal of the wrath of the general public who have felt themselves in daily danger from the racing machines of these ill-advised enthusiasts.

In certain districts whole villages have already united in anti-automobile campaigns, the method of warfare employed consisting in strewing roads with nails and broken bottles. This has been done in Normandy, but the glass and bits of iron were found to damage horses' feet as much as automobile tires, and, moreover, rendered cycling an impossibility for the many country laborers in France who ride to and from their work. So that plan of campaign had to be given up.

Now peasants in some parts contemplate resorting to nothing less than lynch law. In certain districts villagers seriously talk of going about, shot-guns in hand, and winging motorists who tear through hamlets and small towns at fifty miles an hour.

The temper of Jacques Bonhomme has been roused to such an extent that he may one day carry out this threat. Without doubt it rests with motormen themselves to mend or mar the situation. For the present they seem intent on goading country folk to exasperation.

It is true that a vigorous correction from some determined peasants could not but be beneficial to the latter. But the worst part of it is that the sins of the guilty few would, if the present state of affairs persists, be certainly visited on the innocent majority of quiet tourist drivers.

Test of the Darling

V. S. Beardsley, of the Beardsley & Hubbs Co., manufacturers of the Darling Gasoline Vehicle, recently made a trip from Mansfield to Akron, Ohio, a distance of 102 miles, in one of their vehicles, covering the distance in six and one-half hours. In addition to demonstrating the running qualities of his vehicle, Mr. Beardsley aroused the enthusiasm of the Akron people to such an extent that he received several orders for duplicates of the carriage

The Deauville Race Meet

From the standpoint of the French journalist it seems to be necessary that for any race meeting to be classed a successful one a

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great number of records must be broken, and a few either equaled or broken, in order that the meeting may be classed as even interesting, and it is on this basis that a great number of the French papers are arguing over the recent meeting at Deauville, some claiming it to have been a failure, others stating, on the contrary, that it was one of the best ever held on French soil.

As a matter of fact, on account of the inclement weather and the consequently wet grounds, the results are not what they would probably have been with more favorable weather and road conditions. However, fully 8,000 people witnessed the event, with the usual French enthusiasm.

This meet is generally known in France as the Mile of Deauville, from the fact that the events are all of the same distance and run over a mile course. The notable feature of these events is that they are all of a mile and one kilometer in length and are in each case timed as two distinct races, the mile first being timed, at the close of which a second set of timers and officials take the time of the succeeding kilometer. The start of the race is always standing, thus the time of the mile is from a standing start, while that of the kilometer is from a flying start. The only difference in the various races of the meet is in the class of vehicles competing, and this classification is made on a basis which would appear very odd at an American race meet. The motor bicycle races are divided into two classes, in class A the bicycles are manually driven as well as by the power of the motor; in class B the motors only are depended upon to drive the vehicle. The moto-cycle races are divided into two classes—tricycles with one seat occupied, and quadricycles or light three-wheelers with two seats occupied.

The Voiturette, or light vehicle class (weight from 880 to 1,430 pounds), was sub-divided into class A, using mixed vapor-producing liquids; class B, using pure alcohol; class C, 50 per cent alcohol.

An extra prize to the one making the best time for the total mile and kilometer was given to Osmont, who covered the distance on a De Dion Bouton tricycle in 1:53 1-5. The Auto-Velo cup to the firm

making the best average time with three light vehicles was won by the Gardner Serpollet steam vehicles. The alcohol cup to vehicles operated by pure mixed, or 50 per cent alcohol was won by the Darracq.

MOTOR BICYCLES.—Class A.

| DRIVERS | Make | H.P. | Mile Time | Kilom. Time | Total |
|---------|----------|------|-----------|-------------|-------|
| Cissac | Chapelle | 2 | 1:48% | 59% | 2:47% |
| Bucquet | Werner | 1½ | 1:55 | 1:08% | 3:03% |
| Lesaint | Werner | 1½ | 1:58% | 1:08% | 3:06% |

CLASS B.

| | | | | | |
|--------|----------|---|-------|-----|-------|
| Cissac | Chapelle | 2 | 1:40% | 59% | 2:48% |
|--------|----------|---|-------|-----|-------|

MOTORCYCLES—With one seat occupied.

| | | | | | |
|----------|----------|----|-------|-----|-------|
| Osmont | De Dion | 9 | 1:15 | 38% | 1:53% |
| Reith | Buchet | 12 | 1:25% | 41% | 2:07% |
| Gaste | Soncin | 8 | 1:26% | 44% | 2:10% |
| Demestre | Gladia'r | 9 | 1:28% | 46% | 2:14% |

MOTORCYCLES—With two seats occupied.

| | | | | | |
|---------|---------|---|-------|-----|-------|
| Cormier | De Dion | 9 | 1:29% | 44 | 2:13% |
| Osmont | De Dion | 9 | 1:30% | 44% | 2:14% |

VOITURETTES—Weighing up to 880 pounds.

| | | | | | |
|-----------|-----------|----|-------|-----|-------|
| Truffault | Truffa'lt | 12 | 1:28% | 43% | 2:11% |
| Clement | Clement | 6 | 1:32% | 48% | 2:21 |
| Thery | Renault | 6 | 1:37% | 54% | 2:31% |

LIGHT VEHICLES—880 to 1430 pounds, one or two seats occupied.

| | | | | | |
|------------|-----------|----|-------|-------|-------|
| Ribeyrolls | Darracq | 20 | 1:21 | 40% | 2:01% |
| Ribeyrolls | Darracq | 20 | 1:21 | 44% | 2:05% |
| Baras | Darracq | 20 | 1:22 | 44% | 2:06% |
| Edmond | Darracq | 20 | 1:41% | 51% | 2:33 |
| Jacquelin | Jacquelin | 10 | 2:04% | 1:07% | 3:12 |

A. and B. Darracq. C. Darracq, Jacquelin.

With more than two seats occupied.

| | | | | | |
|------------|---------|----|------|-----|-------|
| Ribeyrolls | Darracq | 20 | 1:28 | 46% | 2:14% |
|------------|---------|----|------|-----|-------|

Vehicles Weighing more than 1430 pounds.

| | | | | | |
|---------|--------|----|-------|------|-------|
| Damette | Bardon | 12 | 1:48% | 58% | 2:47% |
| Bardon | Bardon | 12 | 2:14 | 1:12 | 3:26 |

STEAM VEHICLES—A, Light Vehicles.

| | | | | | |
|-------------|----------|---|-------|-----|-------|
| L. Serpol't | Gard Ser | 6 | 1:18% | 37% | 1:55% |
|-------------|----------|---|-------|-----|-------|

B—Vehicles with two seats.

| | | | | | |
|-------------|----------|----|------|-----|-------|
| L. Serpol't | Gard-Ser | 12 | 1:26 | 41% | 2:07% |
|-------------|----------|----|------|-----|-------|

C—Vehicles with four seats.

| | | | | | |
|------------|----------|---|------|----|------|
| Ruthisha'r | Gard-Ser | 6 | 1:24 | 42 | 2:06 |
|------------|----------|---|------|----|------|

ELECTRIC VEHICLES.

| | | | | | |
|-----------|--------|-----|------|----|------|
| De Caters | Jantzy | 100 | 1:20 | 40 | 2:00 |
|-----------|--------|-----|------|----|------|



THE ROADS OF SOUTHERN CALIFORNIA

Rome in Italy had the best roads in the world. California, with an Italian climate, has very inferior roads, but they are probably good enough for the traffic that travels over them. In such climates roads can be best preserved, for the greatest enemy to a well-built road is frost, and frost is somewhat of a stranger in Italy and Southern California. The grand army of tourists that annually peregrinates to Southern California are delighted with Orange avenue, Pasadena, Euclid avenue at Pomona, Magnolia avenue at Riverside; these, however, are merely avenues extending from cities and cannot by any means be considered the average country roads of Southern California. The tourist, filled with admiration of these beautiful vistas, goes away altogether uninformed regarding the condition of the roads of

this district; for indeed, perhaps only the automobilist or the wretched bicyclist, who walks beneath a tropic sun for miles, leading his wheel through a depth of 12 inches of soft sand, detritus, or whatever you may term it, realizes the condition of the roads here in this Italy. Adobe surfaces occur frequently, when the road is found as hard and firm as the best highways of New Eng-

land, but these are spots only, and contrast the more painfully with the miles of soft surface that exhaust the patience of the driver and pedalist. One of the most satirically interesting sights for the wheelman is presented in Ventura county, where straw is seen laid on the roads for miles to prevent the wagons sinking into several inches of dust. A local representative association, known as the Los Angeles Chamber of Commerce, is alive to the need of good roads in this part of the world; it has al-

ready inaugurated a good roads association and tries in every way it can to arouse public and political interest in this important matter. When it is remembered, however, that the population of the entire state is about half a million only, all existing upon a piece of property nearly 1,000 miles long, whereas New York and 50 miles



radius contain 6,000,000 souls, it will be evident that some time must elapse before the needs of the communities in California demand such extensive improvements in road culture as was inaugurated 2,000 years ago in the day of the imperial Caesars.

When the state does really need good roads for the incoming population it will

ROADS OF SOUTHERN CALIFORNIA.

probably go about the business in a businesslike manner, politics permitting. A good road engineer will be employed as a pre-requisite, without which, nothing. This man will turn roads around hills instead of over them; he will sacrifice straightness to a comparatively level surface; to escape a hill 100 feet high he will travel 2,000 feet, for a horse can pull only four-fifths as much on a grade 2 feet to the hundred; with a grade of 10 feet to the hundred he can draw only one-fourth as much as on a level road. Then the cost of haulage is to be considered; it costs one and one-half times as much to haul over a road having a 5 per cent grade, and three times as much over one having a 10 per cent grade, as on a level road. If the hill is of great length it is best to have the lowest part steepest, for if horses are considered, the horse is more fresh at the beginning. An automobilist or cyclist will find an undulating road better than an entirely level one, although this fact may not particularly interest the state engineer. The grade of a road should never be greater than three feet to the hundred.

Now water, somewhat unknown, or, at any rate, unfamiliar in Southern California, is a great enemy to roads. Our engineer will have a fall of six inches from the center to the side if the road is 30 feet wide; for a road 18 feet wide, 3 inches are enough; culverts will be provided and no streams allowed to chase over the roadway. Ditches will be filled with field stones or gravel and protected by straw or brush. The drainage of roads is not so important in Southern California as in eastern and northern states, for it rains in California

south only one month in the year, the rest of the time being glowing diurnal sunshine, interrupted only by ocean fogs and darkness.

Our engineer knows that on a well-made gravel road a horse can draw about twice as much as on a well-made dirt road, while on a hard stone or cement road he can pull four times as much. If California roads were furnished with broad steel bands one horse could do the work of 20. After a road has been properly located, graded and drained the important qualities of hardness and smoothness should be sought after. While earth roads are the most inferior of all kinds, yet they will be sufficient for the dull stretches of vacant land that diversify the rugged heights of Southern California for ages to come. Earth properly rolled and drained and the surface kept in good condition makes a good road; this kind of road is only fit to be tolerated in a new country like Southern California, where the population in proportion to the vast area of the land is extremely fractional.

It may be that a hundred years hence the fine gravel roads of Italy, which have lasted 2,000 years, may be duplicated in Southern California, but as yet, the vast reaches of semi-barren plain, the rugged, tenantless, sun-scorched mountains extending to a limitless distance apparently in the background, and the few lonely ranches that once in a while variegates the eternal monotony of the sun-dried brown sheep pastures, indicate that for a generation at least there will be no very urgent demand for better roads than now exist in Southern California.



STABILITY AND PRICE

In an article contributed to the latest issue of the American Review of Reviews, J. A. Kingman takes the ground that excessive speed as a prime requisite in automobiles will not long prevail in this country. In support of this contention he says:

"Perhaps the most potent reason why the craze for speed will not spread in this country is that the ordinary person cannot own and maintain a racing-machine, which is essentially expensive. The ordinary automobile suitable for country use can be run at a higher rate of speed than should be allowed by law.

"Probably the most important question in the public mind is the matter of price. Only a limited number of people can afford to buy a large and expensive touring carriage; and even if they could do this, there must be considered the additional expense of maintaining an expert mechanic at a high salary. For such large and powerful machines the chaffeur is necessary, and he must be an expert, in order to keep the complicated mechanism in running order. American manufacturers have set about to produce machines in quantity, so that the price can be reduced thereby and the public at large have the benefit of machines which are not extravagant in price, and which can be taken care of by the ordinary individual. If the experiences of some who have bought French machines are repeated, it is hardly to be expected that the importation will continue, especially when the import duty of 45 per cent is considered. One interesting instance may be cited. Last year a well known automobilist imported a famous French racing-machine which had never been beaten, although it had taken part in numerous important road races. The price paid for the vehicle was about \$12,000; adding to this the 45 per cent import duty makes a total first cost of about \$17,000. This machine was used perhaps one dozen times in this country, and was eventually sold for \$6,000 to a well known New Yorker. The latter has had little pleasure from the carriage. Indeed, it can be stated with authority that the automobile is in the repair shop six days after it has been on the road once. It is believed that this experience is by no means an unusual one. Foreign-made machines of

this kind, which are made to order, are difficult to repair, because in case of a breakdown new parts have to be made specially, or ordered from the foreign manufacturer. In both cases the expense is attended with a great loss of time during which the vehicle is, so to speak, out of commission."

So far, it will be observed, Mr. Kingman takes the same ground as did a recent contributor to *MOTOR AGE* on the subject of standardization of parts. His reference to the difficulty of obtaining duplicate parts of foreign machines is exactly in line with that article.

In a later part of the article Mr. Kingman refers to the general expectation that the price of automobiles will decrease and to the common comparison between it and the bicycle. To be sure, he says, the price of the bicycle was high at first, and was reduced materially later; but it is unfair, in any sense, to compare these two machines. The automobile is a road carriage driven by its own power; the bicycle is a small and relatively inexpensive machine driven by human force. The principal reason why the automobile and bicycle are so often compared is that they are often used for the same purpose—in other words, in many cases they may accomplish largely the same end.

The bicycle was at one time a novelty and luxury, but the high price was not due to the fact that the manufacturers desired to make excessive profits. Special machinery had to be purchased in order to make the machines at all; and the starting of an entirely new industry would have been impossible unless such prices were charged. It seems evident that the present prices of the automobiles are more reasonable than were the prices of the early bicycles. It is always possible to make a cheap automobile, but this intention is not held by any reputable manufacturer of automobiles today. Cheap automobiles will not last, even in the hands of a person who knows how to give them proper attention. Machinery must be of the best to stand, not only the wear and tear caused by the rough roads, but the abuse which it is almost sure to receive when it gets into hands which will not operate it carefully or give it the necessary attention.



CYCLE SPORT AND TRADE



Edward Taylor, the French stayer, who recently returned to Paris, discussed at some length with the newspaper representatives he met his opinion of American racing matters. In speaking of his own affairs he stated that it was on account of the terrible heat encountered here that he was unable to get in proper form. He had no idea that the heat of this country could reach such a point. It was his third trip to this country, but was the first time that he had experienced such climatic conditions.

In speaking of American racing men he said: "In my opinion the best of the middle-distance men is Harry Elkes. When he is in condition he is undefeatable behind pacing makers. After him Walthour is certainly the coming man, and Stinson follows very closely." In speaking of Johnny Nelson, of whose death he was not at that time aware, he went on to say that Johnny Nelson is one of the very best, but he is inclined to be irregular. He has moments when he is on top and again he falls behind for a certain time. Jimmy Mitchell is again what he used to be—that is, the real "little prodigy." He still thinks about his horses, but he will certainly not return to them, and I should think there are still a great many chances before him to rank with the very best of middle distance men. He is under the care of Tom Eck, and it is probable that he will go to Paris very shortly.

Champion had bad luck, but he is certainly among the fastest over a course of 10 miles. As to the sprinters, Kramer and Lawson form a pair that is really remarkable. Lawson came over from Australia not long ago and not 5 out of 100 of those who followed the racing game even considered him an outsider for the championship, yet after the first two or three races he showed without a doubt that he was to be counted, and later results have shown beyond a

doubt that he is a first-class man, but though Lawson has exceedingly fast legs he has a very poor head, and in a great many cases he gets caught or bunched and seldom manages to get out. If he happens to be in the lead the last lap it is about a sure thing he will pass the post a winner. Kramer is the fastest man of the two, and I think, of the world. This is not only my opinion, but also that of Major Taylor; he has been defeated by Kramer several times.

I cannot say very much in regard to the Major, as he is not what he used to be. He is somewhat homesick for Europe, and has kept many souvenirs of his touring through the great cities of the old continent, and speaks of them a great deal. It is certain that were it not for the contract under which he is now riding he would have crossed the ocean again long ago. He has, however, recently entered into negotiations with a French firm to ride their bicycle early next season, and therefore I believe it is a certainty that our Parisian friends will see him there early in 1902.

As to the conditions of the sport in the United States, I will say that it was never stronger or run on a larger scale than at the present time. They have races every day and sometimes twice a day, and I am sure that the riders do not require the second invitation to ride. For those who have courage and a reasonable amount of energy there is lots of money in sight. Take, for instance, Stinson and Nelson; why, these two riders have hardly time to go home and take a sleep, as they ride nearly every day. Nelson is the worst of the two. He is watched very closely and carefully by his manager, Spooner, and if he covers, for instance, 10 miles in 16 minutes 10 seconds and the manager thinks this is 10 seconds too slow another tandem is called out and he has to ride the distance over

CYCLE SPORT AND TRADE.

and get it right to the time. This method has enabled Nelson to get as fast speed as it is possible for him to get, and when in condition I think he is able to defeat everybody, except, perhaps, Elkes. One thing I consider certain: Taken as a whole, the American riders are better than ours. They have a way of training and of fighting out the races that ours have not and I think they put more heart into everything than we ever do here.

When asked if he would return next season to this country Taylor said that he would probably do so.

An Unpleasant Experience

While speeding at a 1:45 clip, with his front wheel an inch or two from that of the pacing wheel, Harry Elkes had an experience at New Haven, Conn., last Thursday that he will never forget. Suddenly, with no other warning than the usual premonitory hiss and splutter, every light in the building went out, and the succeeding darkness seemed extraordinarily dense after the flare of bright light and the reflection from the track in the eyes of the men going at express-train speed. Fortunately the men on the pacing machine and Elkes succeeded in keeping their heads, took the turns and, within a few laps, slowed down sufficiently to be able to dismount. It is reported that there is a possibility that the lights were turned out intentionally; at least in the opinion of Elkes, who, it is stated, intends to sue the meet promoters for endangering his life.

Elkes was matched to race Walthour, but at the last moment the management failed to put up the \$500 guarantee promised. This caused the principals to refuse to go on for the percentage offered. While the war of words was in progress Elkes appeared on the track for a work-out. He was feeling in excellent condition, and repeatedly told his pacers to increase the speed; suddenly the lights went out, leaving the champion and his pacemakers in great peril. The huge building was one mass of shadows, and the eye could not even distinguish the outline of the track. The explosion of the motor on the pacing machine told Elkes where the chief danger was, but the pacemakers were completely at sea. The speed at which they were traveling could not be abated in a moment, and the watchers

at the side of the track expected to hear the crash of falling machines and the groans of the injured. Fortunately all the men kept their heads and held the track, bringing the machines to a stop in a lap or two. It is needless to state that there was no race that night, the management announcing to the spectators that the track was too wet for safety. Should the rumor to the effect that the turning out of the lights was intentional and done in a spirit of retaliation, it is to be hoped that the one guilty of such an act will be made to answer for it in a way befitting such a cowardly act.

Sunday Meet at Vailsburg

Newark, N. J.—Record breaking in two events by the amateurs was the feature of the races at Vailsburg this afternoon.

The five-mile amateur scratch race had thirty-five starters and lap prizes brought about a new world's amateur competition record for M. L. Hurley, the amateur champion, who won in 11:06 2-5, as against 11:13 4-5 made by J. T. Ingraham in a handicap race at Buffalo Aug. 5, 1901. Schreiber was second, Menus Bedell third and Billington fourth.

The other record broken was the quarter-mile handicap figures of G. C. Schreiber, 31 2-5 seconds, made at Vailsburg Aug. 25, 1901. The new record also goes to Schreiber, who scored a win in 31 seconds from scratch in his trial heat. The final was very fast and went to Welsher (35) in :29 1-5, with Wangner (35) second, Schreiber (scratch) third and Ayres (30) fourth.

In the mile team race for professionals Kramer and McFarland won first in 2:22 3-5, with Kimble and Leander second and Lawson and Bowler third.

The scratch men failed to get places in a professional mile handicap arranged with a view to record breaking. McFarland (40) won in 1:56 2-5, with Fisher (20) second, Alexander (140) third and Lloyd Krebs (120) fourth.

Elkes Defeated by Michael

New York, Sept. 16.—Jimmy Michael beat Harry Elkes tonight by three and a half laps in a fifteen mile run paced by single motors. He gained a lap in the first two miles, but it took world's indoor record breaking to do it—1:33 1-5 for the mile and 3:08 4-5 for two miles. Record figures

CYCLE SPORT AND TRADE

set by motor tandems were crowded throughout. The time at the finish was 24:43, as against Walthour's 24:19 3-5.

At three miles Michael was a lap and a half to the good. At four miles he again caught Elkes and after a two lap tussle passed him. Elkes made a stubborn fight to the end with a further net loss of but a lap.

Schreiber could not get by the bunch in the open half and failed to score, Losee winning, with Dobbins second, Sullivan handicap, however, handily from scratch in 2:03 4-5 with Fulton (20) second, Hall third and Dove fourth. He won the mile (60) third, and Dobbins (35) fourth.

Standing of the Men

New York, Sept. 6.—To-night's five-mile race at Hartford and to-morrow's half-mile contest at New Haven, both double point championships, will wind up the national circuit and decide the championship as between Kramer and Taylor. Iver Lawson, the third man, had no chance to win, and left to-night to fulfill profitable engagements at Salt Lake City. He came on the circuit late and made a grand showing. The record to date stands:

Frank Kramer, 72; Major Taylor, 64; Lawson, 50; Fenn, 34; Fisher, 20; Cooper and Collett, 14 each; Wilson, 13; Kimble, 10; Freeman, 9; Gascoyne, 8; McFarland, 5, and Newhouse, Hausman and Tom Butler, 1 each.

It is probable that next year four men will start in the final as the result of trial, and semi-final heats only, and that the special 2:10 class races will be abandoned.

A Fallen Saint

A man giving his name as A. F. Lindquist and claiming to be a Baptist minister was recently arrested by the Salt Lake City police after stealing a wheel and selling it three times.

Lindquist appeared in town and, hunting up a young man of the same name, introduced himself as his uncle and stated that he was a Swedish Baptist minister, but had used all his money traveling and was broke. The young man was easy and gave up two dollars. The alleged sky pilot then left, promised to return the next day.

When the shadows of night settled o'er

the land the saintly gentleman became attached to a bicycle that had been left in front of a store and sold it to the proprietor of a drink emporium for four dollars. While in the saloon he told of his relationship to the adopted nephew and announced that he taught him the ways of grace. When the purchaser of the wheel was not looking Lindquist left the saloon and the attachment of the wheel for him was so great that it went with him and was sold to another saloon-keeper. Here he again succeeded in getting away with the wheel and in time sold it to another jag dispenser, and having accumulated wealth enough for one evening, he left the machine and it was found there the next morning.

Madison Square Meet

New York, Sept. 13.—The 25-mile professional race drew a big crowd at Madison Square Garden to-night. Among the fifteen starters McFarland, Fisher and Wilson were the most prominent, though Bowler was rated as dangerous, having scored notably since his arrival on the eastern circuit. There were special prizes for every mile and extra prizes for the leaders at each five miles, and this kept the bunch going pretty fast. The last mile Mayo held the lead half the way, and then Bowler took up the running. McFarland made a gallant effort and got by at the last turn, winning by a half length. He and Bowler rode locked down the stretch, but no foul was adjudged. Wilson was third, Fisher fourth and Nat Butler fifth. The time was 1:02:02 3-5. Bowler led at five and ten miles, Blucher at fifteen and Nat Butler at twenty.

Fisher (20) was the only back marker to start in the mile handicap and finished second to Bowler (60), the winner in 1:58. Caldwell (80) was third.

Schreiber made a new indoor record in the mile amateur handicap, winning from scratch in the final in 2:01 1-5, with Fulton (20) second, De Palma (80) third and Achorn (80) fourth. The order of finish in the half-mile open was Schofield, Van Cott, Dove.

Hurley's New Record

New York, Sept. 15.—About 5,000 spectators witnessed the bicycle racing at the Vailsburg track today. Fast time was made

CYCLE SPORT AND TRADE

in most of the contests and two world's records were broken. George C. Schreiber, of New York, finished close up in the quarter-mile handicap for amateurs, covering the distance in 0:31. The old record, made by himself, was 0:31 2-5.

M. L. Hurley, of New York, not only won the five-mile race for amateurs after a sharp struggle up the track with Schreiber, but established a record for the distance. Hurley made the five miles in 11:06 2-5. Inghram made the old record of 11:13 4-5 at Buffalo.

The team race for professionals was won by Kramer and McFarland. McFarland also captured the one-mile handicap from the forty-yard mark in 1:56 2-5.

Will This Be a Warning?

A resident of Elsie, Ohio, was carrying a 4-year-old nephew on the handle-bars of his bicycle when the little fellow's foot was caught in the front wheel, throwing both riders with great violence. In the fall Mr. Sherman received injuries from which he died after several hours of intense agony. The boy had one foot nearly cut off and received severe injuries elsewhere, but will recover.

The habit of carrying small children on the front of bicycles is daily becoming more common, and it is apparently only the providence that is said to take care of children and others that has prevented an even greater number of accidents than the unpleasantly large number reported. It is really strange that such a great number of people will persist in doing this, as, while a bicycle may be a safe conveyance under ordinary circumstance and the rider have complete confidence in his ability to handle it, the addition of the extra weight on the steering-wheel makes a radical difference in its steering qualities, and to carry a child in this way is jeopardizing its life in a manner that is foolhardy to almost a criminal extent.

Bay View Wheelmen Meet

Newark, N. J., Sept. 16.—Frank Kramer, Major Taylor and Iver Lawson, the leaders in the championship struggle and without dispute the fastest three sprinters in America, met in a mile heat, single pace, match at the meet of the Bay View wheelmen at

Vailsburg this afternoon and 5,000 people saw a memorable struggle, in which the Jerseyman triumphed on his home track.

The conditions called for single pace to the last lap, a quarter of a mile from home. Hausman carried them for a half mile and then Jack Coburn cut in and took them a quarter.

The first heat the trio lined up with Kramer on the pole, Taylor and Lawson on the outside. They caught the pace in this order. Kramer caught Coburn cleanly when he cut in at the half. Kramer began his run early in the back stretch and swung Taylor a little wide as they entered the stretch. Lawson cut in on the pole. In the brush up the stretch Kramer won by a half length in 2:12 3-5, Taylor beating Lawson a foot for the place.

The men took the same order on the mark the second heat. The trio jockeyed for the pace. All missed it and went by, Hausman again went to the front and Lawson caught him, but Kramer outmaneuvered him and stole it, Taylor jumping into second position. Kramer, who was in the lead, made his effort in the middle of the back stretch and drew away very rapidly. Taylor gained some on the run home but eased up in the stretch and was beaten a length in 2:08. Lawson sat up at the end and was ten lengths to the bad.

The five-mile New Jersey state championship went to Charles Schlee, the Irvington-Milburn crack, in 11:57, with Harry Chappey second and H. D. Hooper third. Welshe (140) won the mile handicap in 2:02 2-5, with Hilfiker (160) second, Wolstenholm (160) third and Hurley (scratch) fourth. Hurley won the half-mile open, with Billington second, Glasson third and Welshe fourth.

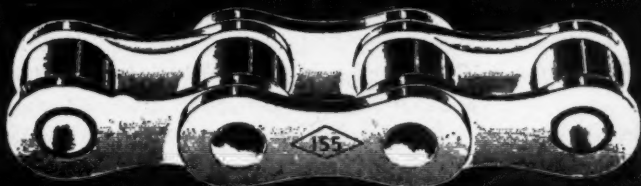
A motor tandem match in heats of a quarter-mile, five miles and two miles fell to Hadfield and Hunter. The times were :21 2-5, 7:22 4-5 and 3:01 4-5.

A Spanish Motorcycle Catalogue

An evidence of the rapidly spreading popularity of the motor bicycle is the publication of a Spanish edition of the catalogue of the Mitchell motor-bicycle by the Wisconsin Wheel Works. The business in this line in Mexico and the Spanish-speaking countries of South America, particularly Buenos Ayres, has been very encouraging

CHAIN TRANSMISSION OF POWER IS SATISFACTORY

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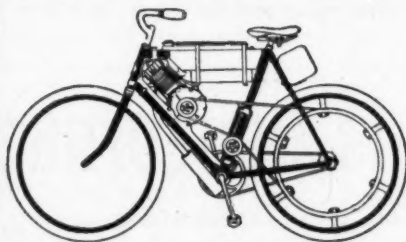
Diamond Chains have large nickel steel hard rivets, are accurate and highly finished.

The Automobile and Cycle Parts Co.

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THE MARVEL OF THE ENDURANCE RUN FROM NEW YORK
TO BUFFALO WAS THE

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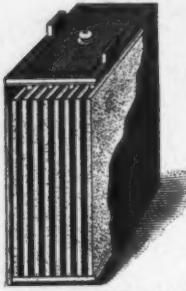
There were four (4) **AUTO-BIES** started in the endurance run and they **all** went through to the finish. The **AUTO-BIES** made more controls than all the other motor bicycles combined and all along the route received the congratulations of those who went through on the vehicles.

If you want to know what a fearful condition the roads were in, read the news columns of this publication and you will appreciate the awful test to which the machines were put.

[The Endurance Test furnished another proof that the **AUTO-BI** is the only motor bicycle worth considering] One of the **AUTO-BIES** used in this run was the machine that made the run from Buffalo to New York the week previous and was the first motor Cycle that ever crossed the state of New York.

There are many weeks to come of glorious riding. If you want to enjoy them in all their glory, buy an **AUTO-BI** and go skimming through the land.

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ADVERTISEMENTS.

and it is to meet the rapidly increasing number of inquiries from these countries that this catalogue is issued. It is practically a Spanish reprint of their catalogue No. 8, which has been widely circulated during the past few months.

Capital Stock Reduced

A certificate of the reduction of the capital stock of the Vern Bicycle & Rubber Company of New Haven, from \$15,000 to \$8,000, has been filed with the secretary of state.

The Ludington Company of New Haven has filed with the secretary of state a certificate of reduction of its capital stock from \$50,000 to \$25,000.

Must Now Pay Deposit

Hereafter cyclists traveling into Canada will have to carry with them spare cash to the extent of at least one-third the value of their wheels. H. W. Allen, collector at Windsor, has received instructions from the Canadian Customs Department that members of the League of American Wheelmen must in future make a deposit on their wheels when they enter Canada. Some years ago the department consented to accept membership cards in the L. A. W. in place of a cash deposit, but this has not proven satisfactory. The deposit demanded is about one-third the value of the machine, and this money will not be refunded until the department has satisfactory evidence that the wheel has been reported out at the proper port.

The Kelsey Company, 334 Genesee street, Buffalo, N. Y., has recently purchased the entire wholesale bicycle and supply business of H. C. Colton of that city. After November 1 the combined business will be carried on at 39 and 41 Court street, Buffalo, the stand previously occupied by the Colton establishment. The Kelsey Company is the successor to Matthew Strauss, and is one of the large jobbers and selling agents of bicycle parts, sundries, fittings, etc.

The latest scheme of a bicycle dealer in the way of a side line is that inaugurated by H. J. Flock, of Sterling, Ill., who, it is stated, has taken up the novel scheme of renting umbrellas to passing cyclists caught in the sudden rains incident to this time of the year. It is said that the idea has met with considerable favor.

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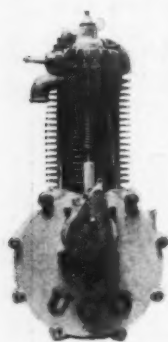
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William L. Elkins, of Ashbourne, Pa., is about to build an automobile stable on a very elaborate scale. It will be of cut stone with limestone trimmings, with tiled roof. It will be furnished with electric lights and the floor space will be 37x44 feet.



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Always on hand Steam and Gasoline vehicles from trades. Write us.

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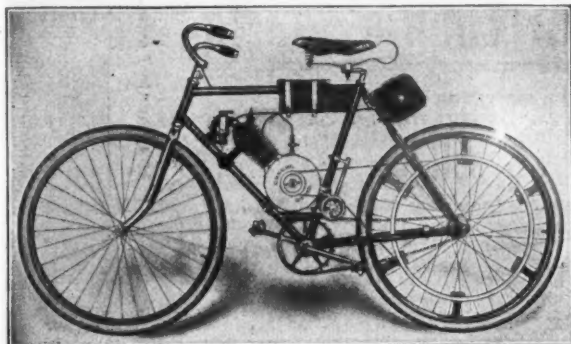
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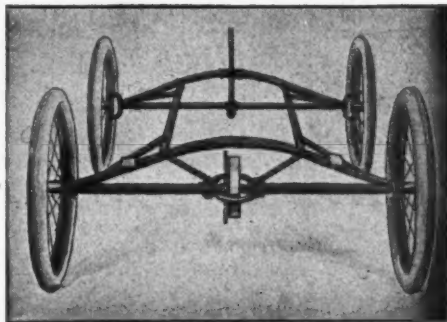
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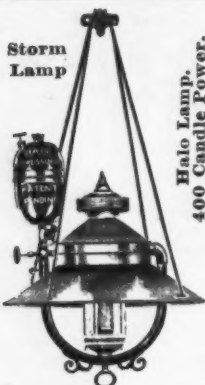
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ADVERTISEMENTS.



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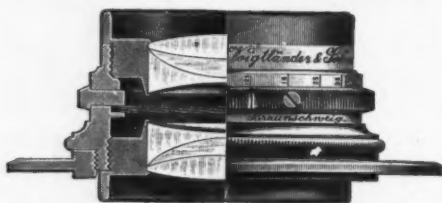
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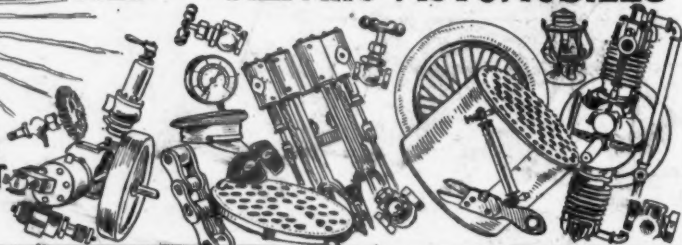
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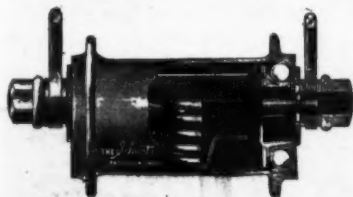
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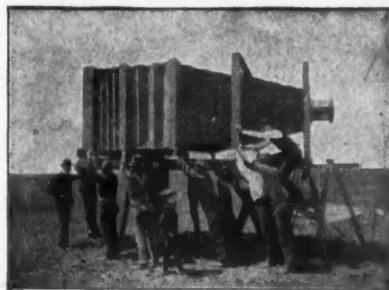
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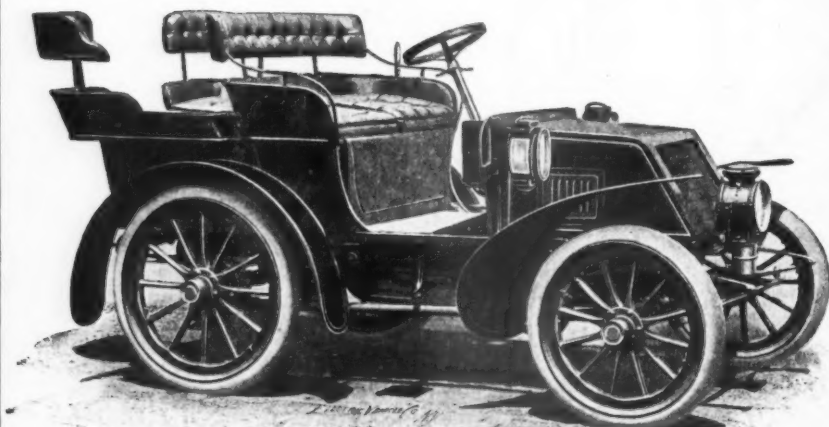
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